

1/100

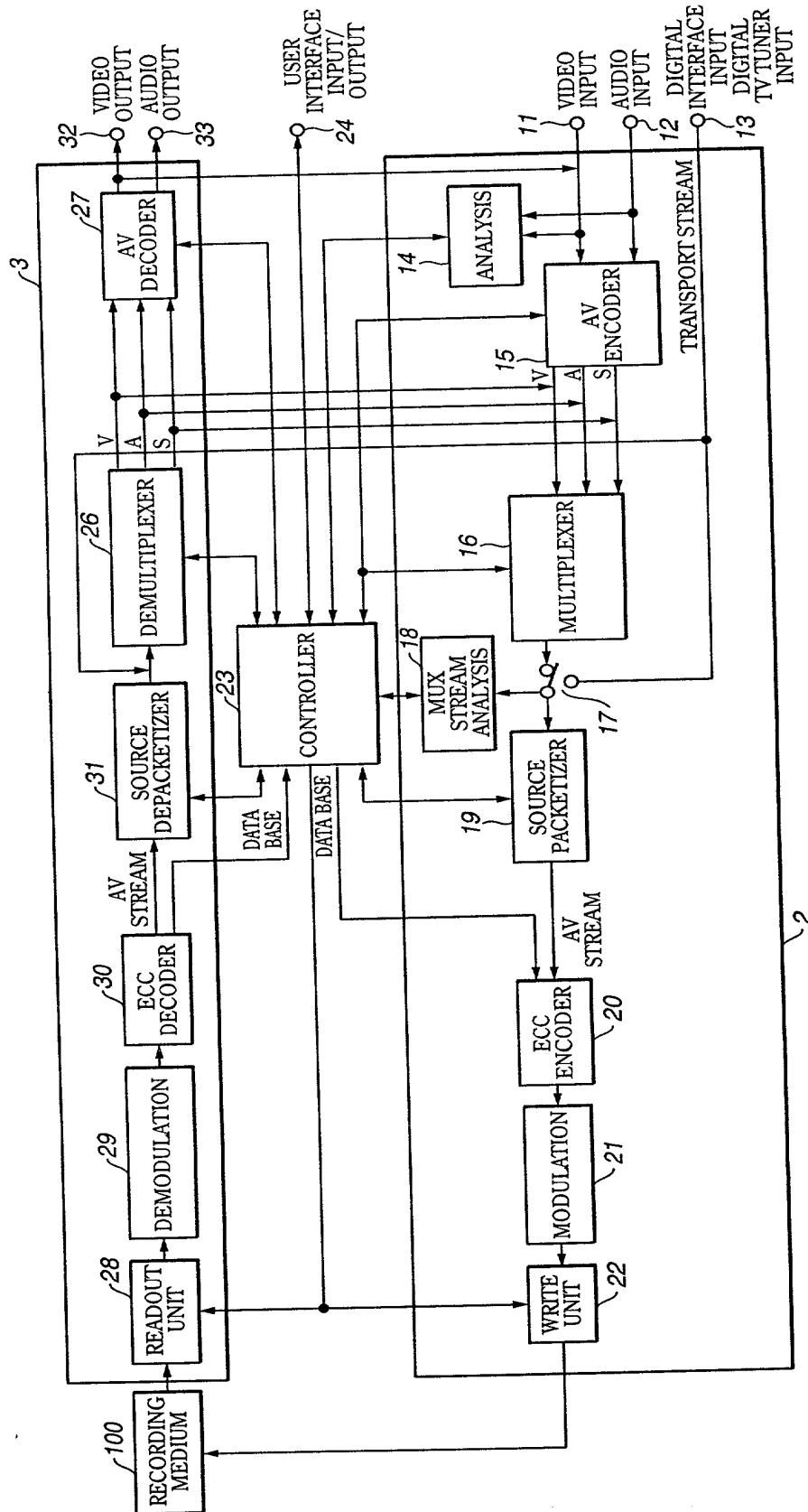


FIG.1

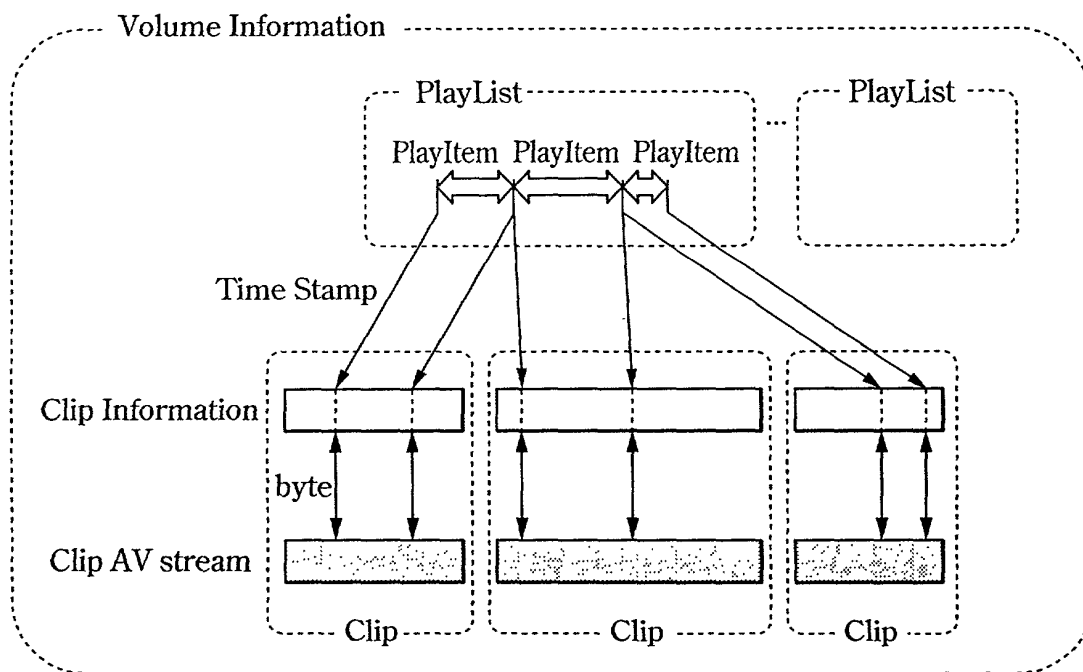


FIG.2

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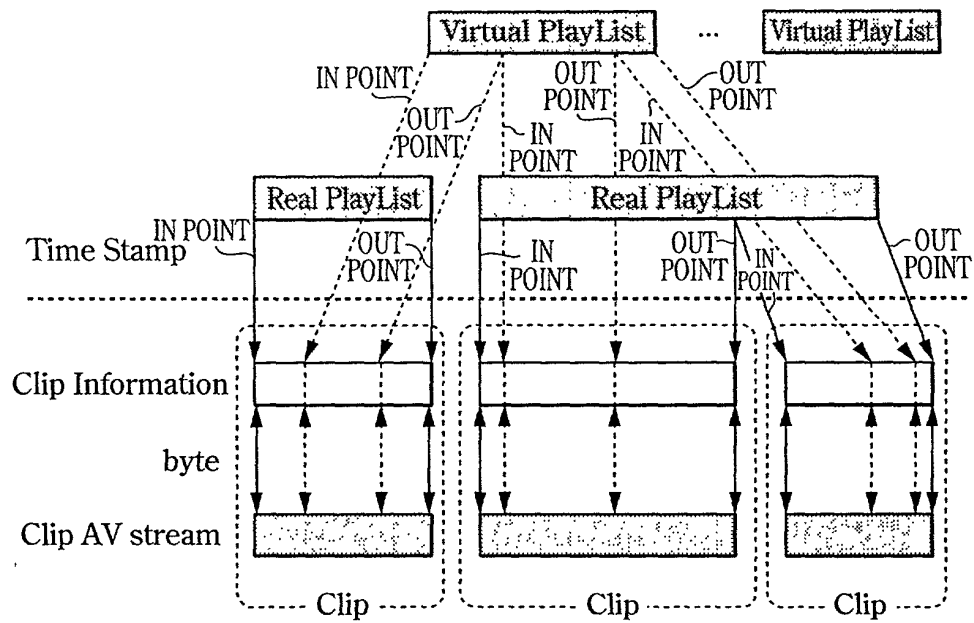


FIG.3

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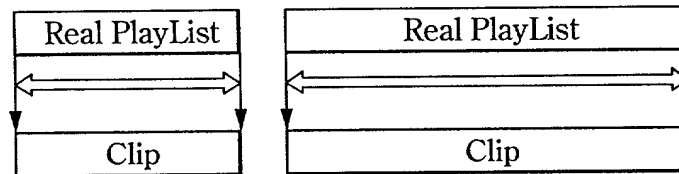


FIG.4A

DIVISION POINT

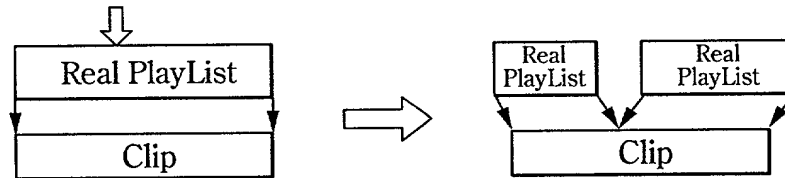


FIG.4B

COUPLING

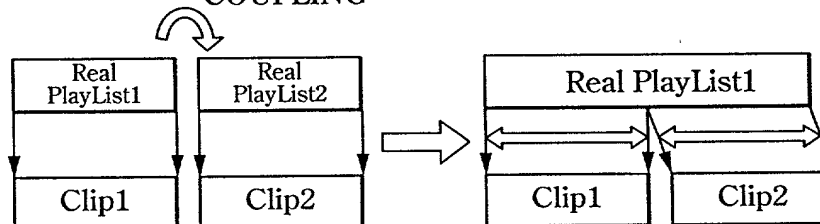
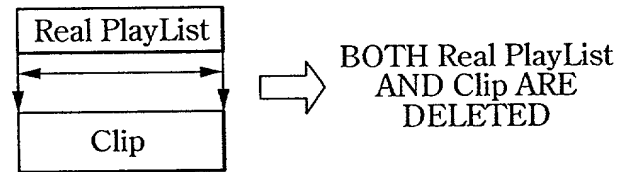
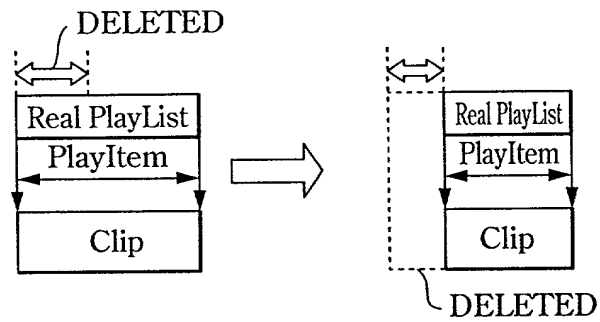
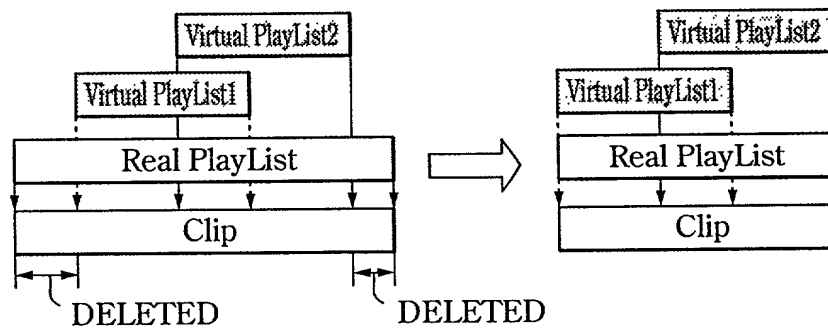
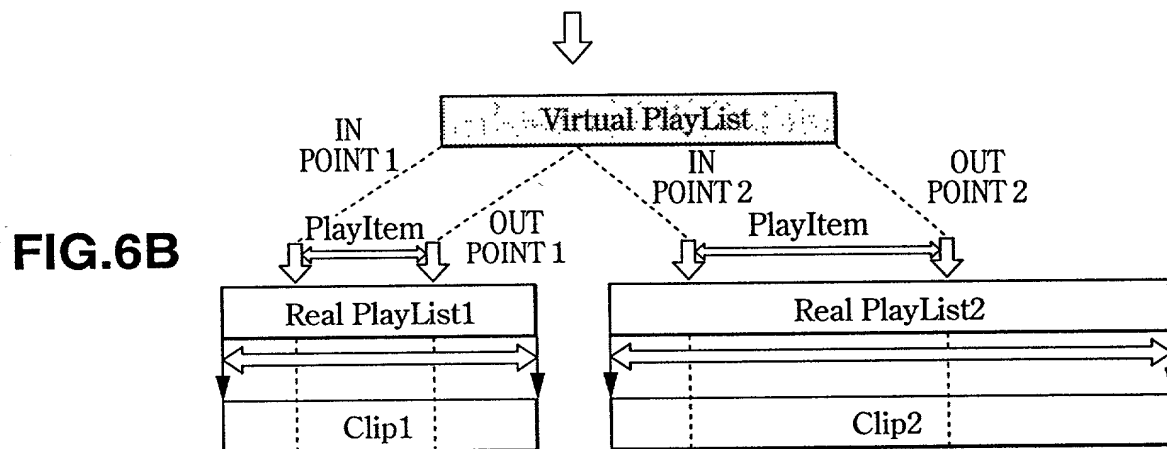
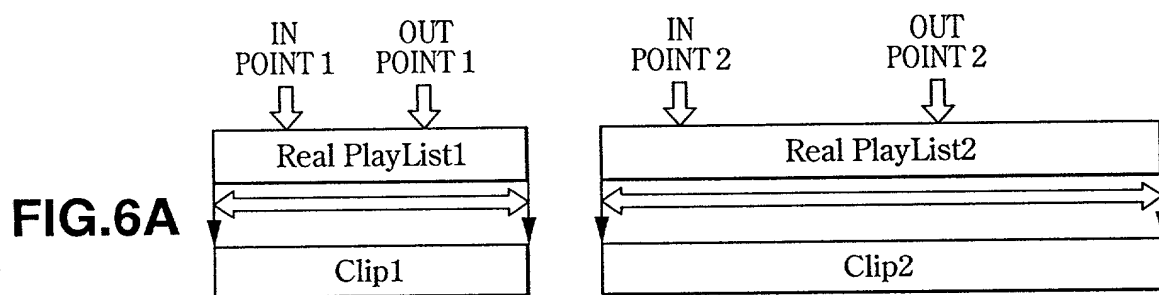


FIG.4C

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**FIG.5A****FIG.5B****FIG.5C**

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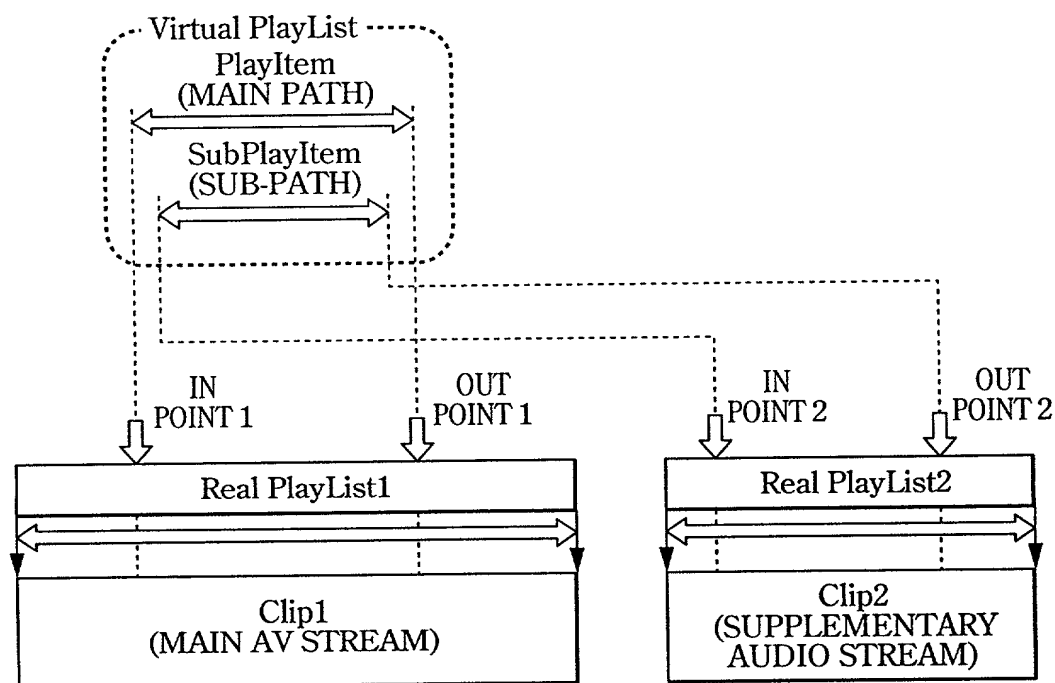
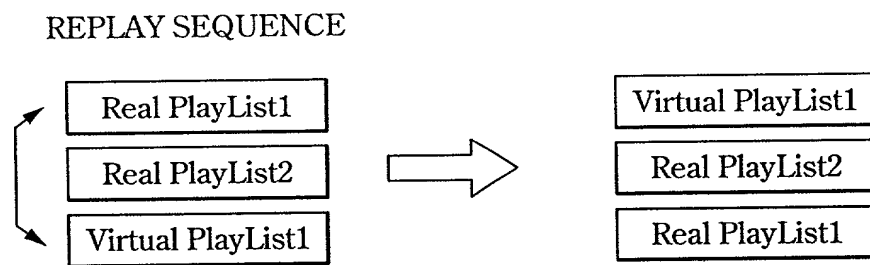


FIG.7

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**FIG.8**



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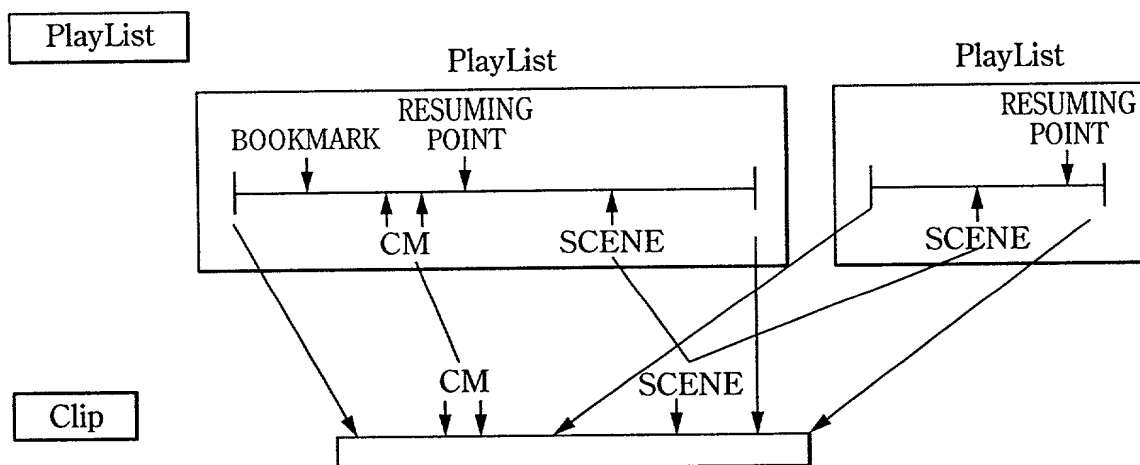


FIG.9

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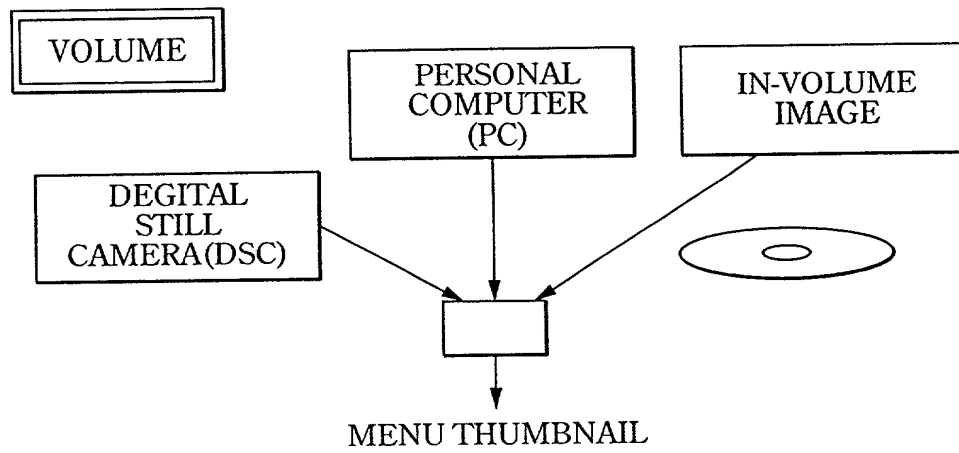


FIG.10

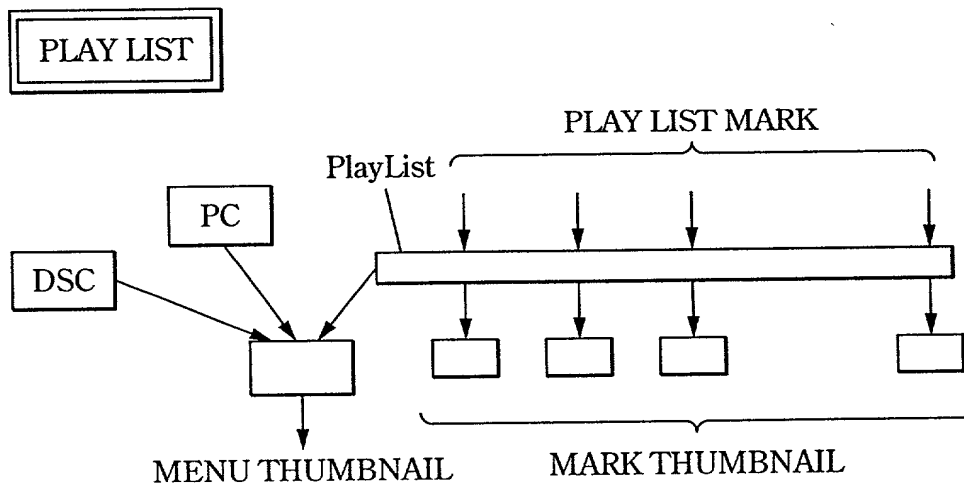


FIG.11

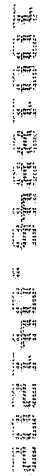


Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains. The *Agrobacterium* strains were grown in YEA medium for 24 h at 28 °C. The cell concentration of the strains was adjusted to 1.0 × 10<sup>8</sup> cells/ml. The cell suspension was mixed with the plant tissue and the transformation efficiency was determined. The results are the mean of three independent experiments. Error bars represent standard deviation.

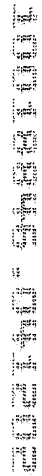
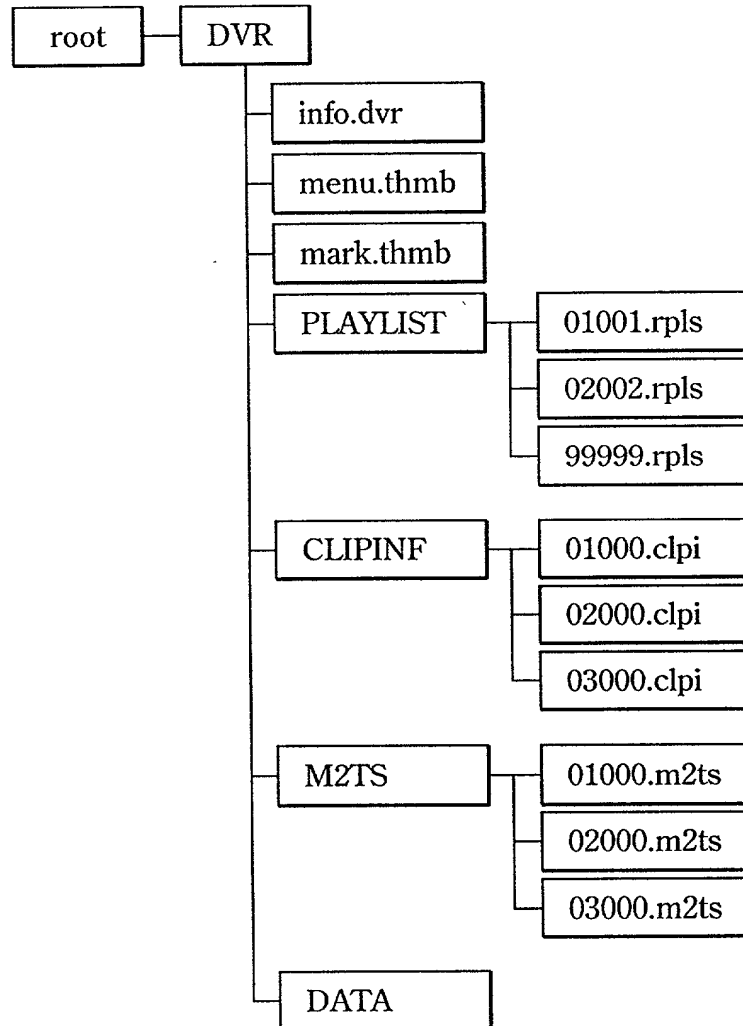


Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains. The *Agrobacterium* strains were grown in YEA medium for 24 h at 28 °C. The cell concentration of the strains was adjusted to 1.0 × 10<sup>8</sup> cells/ml. The cell suspension was mixed with the plant tissue and the transformation efficiency was determined. The results are the mean of three independent experiments. Error bars represent standard deviation.

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**FIG.14**

| SYNTAX                                 | NUMBER<br>OF BYTES | ABBREVIATION |
|--|--------------------|--------------|
| info.dvr {                             |                    |              |
| <b>TableOfPlayLists_Start_address</b>  | 32                 | uimsbf       |
| <b>MakersPrivateData_Start_address</b> | 32                 | uimsbf       |
| reserved                               | 192                | bslbf        |
| <b>DVRVolume()</b>                     |                    |              |
| for (i=0;i<N1;i++){                    |                    |              |
| padding_word                           | 16                 | bslbf        |
| }                                      |                    |              |
| <b>TableOfPlayLists()</b>              |                    |              |
| for (i=0;i<N2;i++){                    |                    |              |
| padding_word                           | 16                 | bslbf        |
| }                                      |                    |              |
| <b>MakersPrivateData()</b>             |                    |              |
| }                                      |                    |              |

FIG.15

| SYNTAX                   | NUMBER<br>OF BYTES | ABBREVIATION |
|--------------------------|--------------------|--------------|
| DVRVolume(){             |                    |              |
| <b>version_number</b>    | 8*4                | bslbf        |
| <b>length</b>            | 32                 | uimsbf       |
| <b>ResumeVolume()</b>    |                    |              |
| <b>UIAppInfoVolume()</b> |                    |              |
| }                        |                    |              |

FIG.16

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| SYNTAX                      | NUMBER<br>OF BYTES | ABBREVIATION |
|-----------------------------|--------------------|--------------|
| ResumeVolume(){             |                    |              |
| reserved                    | 15                 | bslbf        |
| <b>valid_flag</b>           | 1                  | bslbf        |
| <b>resume_PlayList_name</b> | 8*10               | bslbf        |
| }                           |                    |              |

FIG.17

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| SYNTAX                         | NUMBER<br>OF BYTES | ABBREVIATION |
|--------------------------------|--------------------|--------------|
| UIAppInfoVolume(){             |                    |              |
| <b>character_set</b>           | 8                  | bslbf        |
| <b>name_length</b>             | 8                  | uimsbf       |
| <b>Volume_name</b>             | 8*256              | bslbf        |
| <b>reserved</b>                | 15                 | bslbf        |
| <b>Volume_protect_flag</b>     | 1                  | bslbf        |
| <b>PIN</b>                     | 8*4                | bslbf        |
| <b>ref_thumbnail_index</b>     | 16                 | uimsbf       |
| <b>reserved_for_future_use</b> | 256                | bslbf        |
| }                              |                    |              |

FIG.18



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| VALUE     | CHARACTER LETTER ENCODING |
|-----------|---------------------------|
| 0x00      | Reserved                  |
| 0x01      | ISO/IEC 646 (ASCII)       |
| 0x02      | ISO/IEC 10646-1 (Unicode) |
| 0x03-0xff | Reserved                  |

**FIG.19**

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| SYNTAX  | NUMBER<br>OF BYTES | ABBREVIATION |
|---|--------------------|--------------|
| TableOfPlayLists(){                             |                    |              |
| <b>version_number</b>                           | 8*4                | bslbf        |
| <b>length</b>                                   | 32                 | uimsbf       |
| <b>number_of_PlayLists</b>                      | 16                 | uimsbf       |
| for (i=0; i< <i>number_of_PlayLists</i> ; i++){ |                    |              |
| <b>PlayList_file_name</b>                       | 8*10               | bslbf        |
| }   |                    |              |
| }   |                    |              |

FIG.20

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| SYNTAX                                 | NUMBER<br>OF BYTES | ABBREVIATION |
|--|--------------------|--------------|
| TableOfPlayLists(){                    |                    |              |
| <b>version_number</b>                  | 8*4                | bslbf        |
| <b>length</b>                          | 32                 | uimsbf       |
| <b>number_of_PlayLists</b>             | 16                 | uimsbf       |
| for (i=0; i<number_of_PlayLists; i++){ |                    |              |
| <b>PlayList_file_name</b>              | 8*10               | bslbf        |
| <b>UIAppInfoPlayList()</b>             |                    |              |
| }                                      |                    |              |
| }                                      |                    |              |

FIG.21

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| SYNTAX                                     | NUMBER<br>OF BYTES        | ABBREVIATION |
|--|---------------------------|--------------|
| MakersPrivateData(){                       |                           |              |
| <b>version_number</b>                      | 8*4                       | bslbf        |
| <b>length</b>                              | 32                        | uimsbf       |
| if (length !=0){                           |                           |              |
| <b>mpd_blocks_start_address</b>            | 32                        | uimsbf       |
| <b>number_of_maker_entries</b>             | 16                        | uimsbf       |
| <b>mpd_block_size</b>                      | 16                        | uimsbf       |
| <b>number_of_mpd_blocks</b>                | 16                        | uimsbf       |
| reserved                                   | 16                        | bslbf        |
| for (i=0; i<number_of_maker_entries; i++){ |                           |              |
| <b>maker_ID</b>                            | 16                        | uimsbf       |
| <b>maker_model_code</b>                    | 16                        | uimsbf       |
| <b>start_mpd_block_number</b>              | 16                        | uimsbf       |
| reserved                                   | 16                        | bslbf        |
| <b>mpd_length</b>                          | 32                        | uimsbf       |
| }  |                           |              |
| <b>stuffing_bytes</b>                      | 8*2*L1                    | bslbf        |
| for(j=0; j<number_of_mpd_blocks; j++){     |                           |              |
| <b>mpd_block</b>                           | mpd_block_<br>size*1024*8 |              |
| }  |                           |              |
| }  |                           |              |
| }  |                           |              |

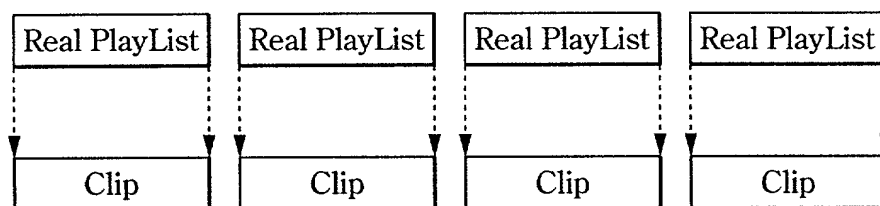
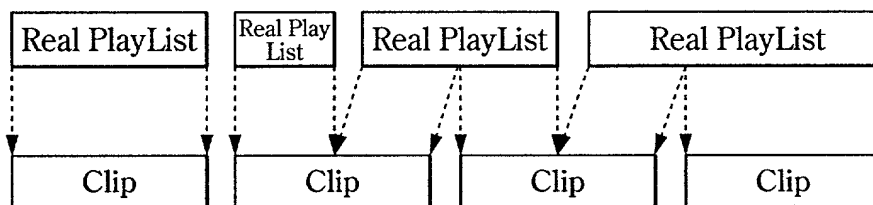
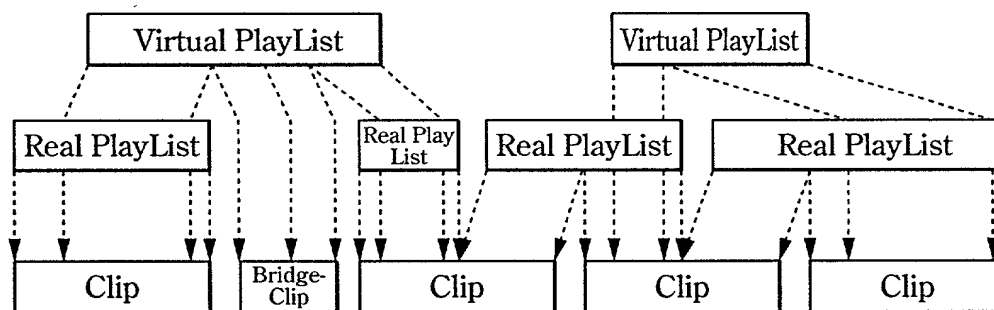
FIG.22

20240424 14:44:00

| SYNTAX                                 | NUMBER<br>OF BYTES | ABBREVIATION |
|--|--------------------|--------------|
| xxxxxx.rpls / yyyyyy.vpls {            |                    |              |
| <b>PlayListMark_Start_address</b>      | 32                 | uimsbf       |
| <b>MakersPrivateData_Start_address</b> | 32                 | uimsbf       |
| reserved                               | 192                | bslbf        |
| <b>PlayList()</b>                      |                    |              |
| for (i=0;i<N1;i++){                    |                    |              |
| padding_word                           | 16                 | bslbf        |
| }                                      |                    |              |
| <b>PlayListMark()</b>                  |                    |              |
| for (i=0;i<N2;i++){                    |                    |              |
| padding_word                           | 16                 | bslbf        |
| }                                      |                    |              |
| <b>MakersPrivateData()</b>             |                    |              |
| }                                      |                    |              |

FIG.23

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**FIG.24A****FIG.24B****FIG.24C**

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| SYNTAX   | NUMBER<br>OF BYTES | ABBREVIATION |
|--|--------------------|--------------|
| PlayList(){  |                    |              |
| <b>version_number</b>  | 8*4                | bslbf        |
| <b>length</b>  | 32                 | uimsbf       |
| <b>PlayList_type</b>   | 8                  | uimsbf       |
| <b>CPI_type</b>  | 1                  | bslbf        |
| reserved   | 7                  | bslbf        |
| <b>UIAppInfoPlayList()</b>   |                    |              |
| <b>number_of_PlayItems</b> // main path                                    | 16                 | uimsbf       |
| if (<Virtual PlayList>){   |                    |              |
| <b>number_of_SubPlayItems</b> // sub path                                  | 16                 | uimsbf       |
| }else{   |                    |              |
| reserved   | 16                 | bslbf        |
| }  |                    |              |
| for (PlayItem_id=0;<br>PlayItem_id<number_of_PlayItems;<br>PlayItem_id++){ |                    |              |
| <b>PlayItem()</b> //main path  |                    |              |
| }  |                    |              |
| if (<Virtual PlayList>){   |                    |              |
| if (CPI_type==0 && PlayList_type==0){                                      |                    |              |
| for (i=0; i<number_of_SubPlayItems; i++)                                   |                    |              |
| <b>SubPlayItem()</b> //sub path  |                    |              |
| }  |                    |              |
| }  |                    |              |
| }  |                    |              |

FIG.25

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| PlayList_type | MEANING  |
|---------------|--|
| 0             | PLAY LIST FOR AV RECORDING<br>ALL CLIPS REFERENCED IN THIS PLAY LIST MUST<br>CONTAIN ONE OR MORE VIDEO STREAMS   |
| 1             | PLAY LIST FOR AUDIO RECORDING<br>ALL CLIPS REFERENCED IN THIS PLAYLIST MUST<br>CONTAIN ONE OR MORE AUDIO STREAMS AND MUST<br>NOT CONTAIN VIDEO STREAMS |
| 2-255         | reserved   |

FIG.26



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| SYNTAX                         | NUMBER<br>OF BYTES | ABBREVIATION |
|--------------------------------|--------------------|--------------|
| UIAppInfoPlayList2(){          |                    |              |
| <b>character_set</b>           | 8                  | bslbf        |
| <b>name_length</b>             | 8                  | uimsbf       |
| <b>PlayList_name</b>           | 8*256              | bslbf        |
| reserved                       | 8                  | bslbf        |
| <b>record_time_and_date</b>    | 4*14               | bslbf        |
| reserved                       | 8                  | bslbf        |
| <b>duration</b>                | 4*6                | bslbf        |
| <b>valid_period</b>            | 4*8                | bslbf        |
| <b>maker_id</b>                | 16                 | uimsbf       |
| <b>maker_code</b>              | 16                 | uimsbf       |
| reserved                       | 11                 | bslbf        |
| <b>playback_control_flag</b>   | 1                  | bslbf        |
| <b>write_protect_flag</b>      | 1                  | bslbf        |
| <b>is_played_flag</b>          | 1                  | bslbf        |
| <b>archive</b>                 | 2                  | bslbf        |
| <b>ref_thumbnail_index</b>     | 16                 | uimsbf       |
| <b>reserved_for_future_use</b> | 256                | bslbf        |
| }                              |                    |              |

FIG.27

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| write_protect_flag | MEANING   |
|--------------------|---|
| 0b                 | THE PlayList CAN BE ERASED FREELY   |
| 1b                 | THE PlayList CONTENTS SHOULD NOT BE ERASED<br>NOR CHANGED EXCEPT write-protect-flag |

**FIG.28A**

| is_played_flag | MEANING   |
|----------------|---|
| 0b             | THE PlayList HAS NOT BEEN REPRODUCED SINCE<br>ITS RECORDING |
| 1b             | THE PlayList WAS ONCE REPRODUCED SINCE ITS<br>RECORDING     |

**FIG.28B**

| archive | MEANING            |
|---------|--------------------|
| 00b     | NO MEANING DEFINED |
| 01b     | ORIGINAL           |
| 10b     | COPY               |
| 11b     | reserved           |

**FIG.28C**

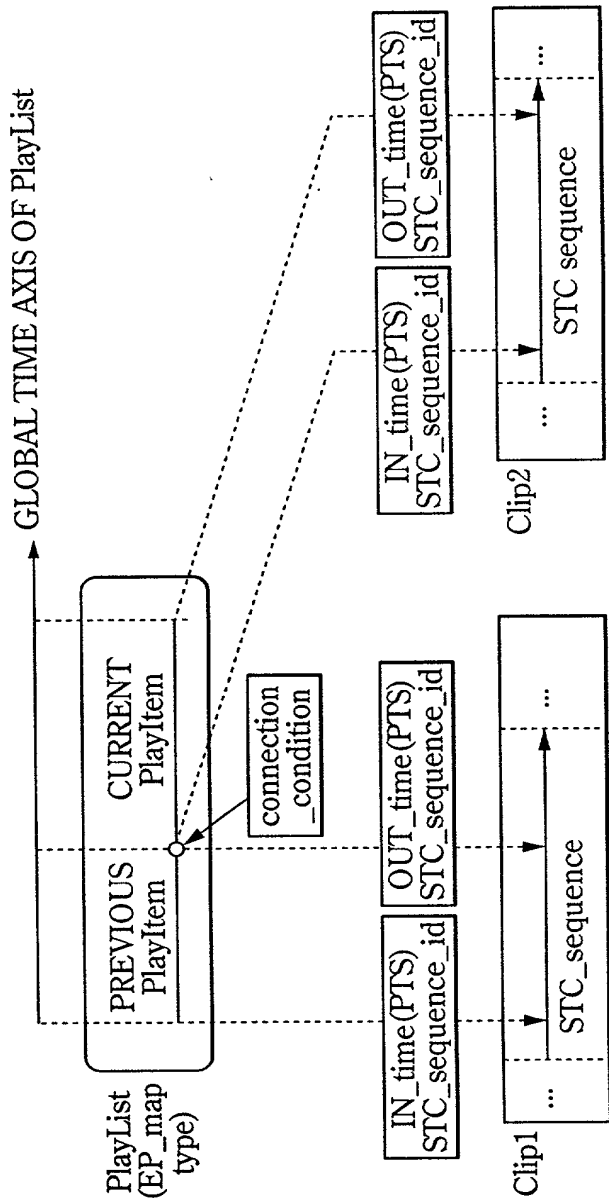


FIG.29

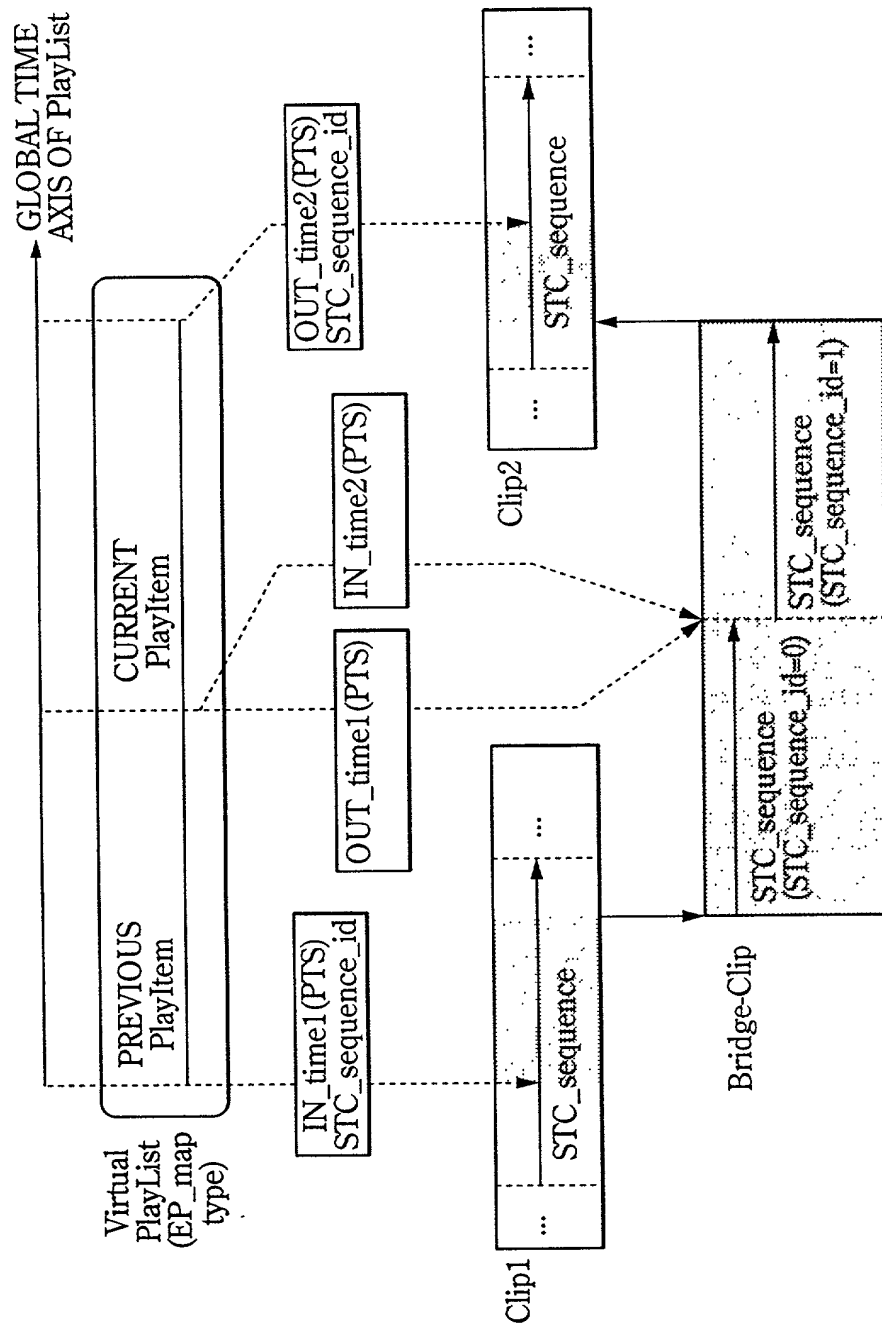


FIG.30

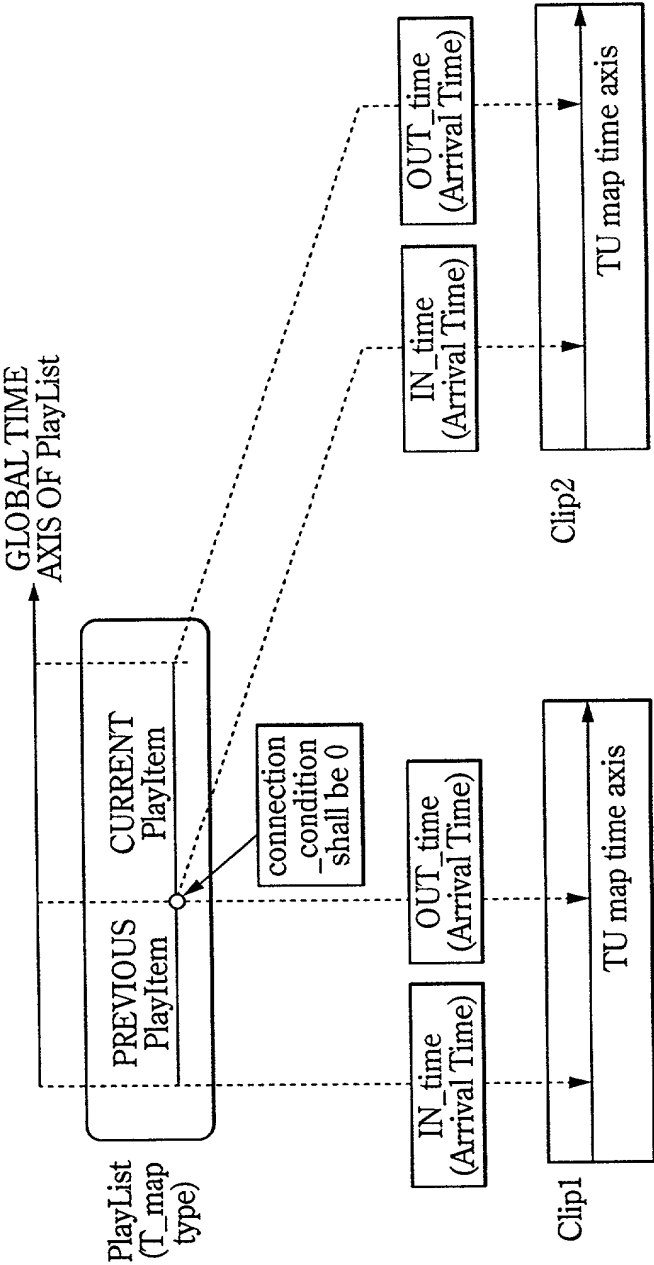


FIG.31

| SYNTAX                                    | NUMBER OF BYTES | ABBREVIATION |
|---|-----------------|--------------|
| PlayItem(){                               |                 |              |
| <b>Clip_information_file_name</b>         | 8*10            | bslbf        |
| reserved                                  | 24              | bslbf        |
| <b>STC_sequence_id</b>                    | 8               | uimsbf       |
| <b>IN_time</b>                            | 32              | uimsbf       |
| <b>OUT_time</b>                           | 32              | uimsbf       |
| reserved                                  | 14              | bslbf        |
| <b>connection_condition</b>               | 2               | bslbf        |
| if (<Virtual PlayList>){                  |                 |              |
| if ( <i>connection_condition</i> =='10'){ |                 |              |
| <b>BridgeSequenceInfo()</b>               |                 |              |
| }   |                 |              |
| }   |                 |              |
| }   |                 |              |

FIG.32

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|                               |  |
|-------------------------------|--|
| CPI_type<br>in the PlayList() | SEMANTICS OF IN_time   |
| EP_map type                   | IN_time MUST INDICATE UPPER 32 BITS OF 33 BIT<br>LENGTH CORRESPONDING TO FIRST PRESENTATION<br>UNIT IN PlayItem  |
| TU_map type                   | IN_time MUST BE TIME ON TU_map_time_axis, AND<br>MUST BE ROUNDED TO time_unit PRECISION. IN-time IS<br>CALCULATED BY FOLLOWING EQUATION:<br><br>$\text{IN\_time} = \text{TU\_start\_time} \% 2^{32}$ |

FIG.33

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|                               |   |
|-------------------------------|---|
| CPI_type<br>in the PlayList() | SEMANTICS OF OUT_time   |
| EP_map type                   | <p>OUT_time MUST INDICATE UPPER 32 BITS OF THE VALUE OF Presentation_end_TS CALCULATED BY FOLLOWING EQUATION:</p> $\text{Presentation\_end\_TS} = \text{PTS\_out} + \text{AU\_duration}$ <p>WHERE PTS_out IS 33-BIT LONG PTS CORRESPONDING TO LAST PRESENTATION UNIT IN PlayItem. AU_duration IS 90 kHz-DISPLAY TIME OF LAST PRESENTATION UNIT.</p> |
| TU_map type                   | <p>OUT_time MUST BE TIME ON TU_map_time_axis AND BE ROUNDED TO time_unit PRECISION. OUT_time IS CALCULATED BY FOLLOWING EQUATION:</p> $\text{OUT\_time} = \text{TU\_start\_time} \% 2^{32}$   |

FIG.34

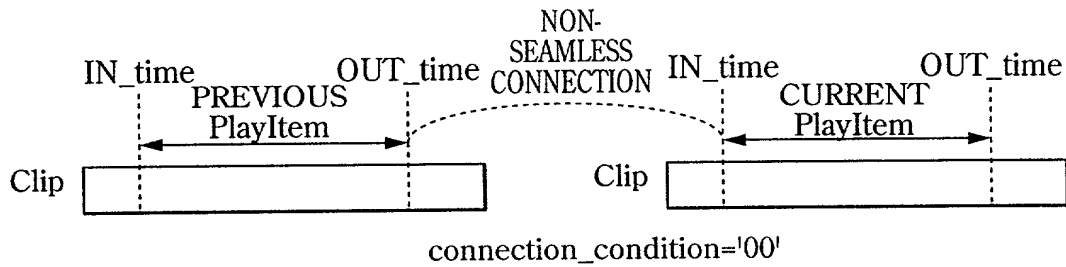
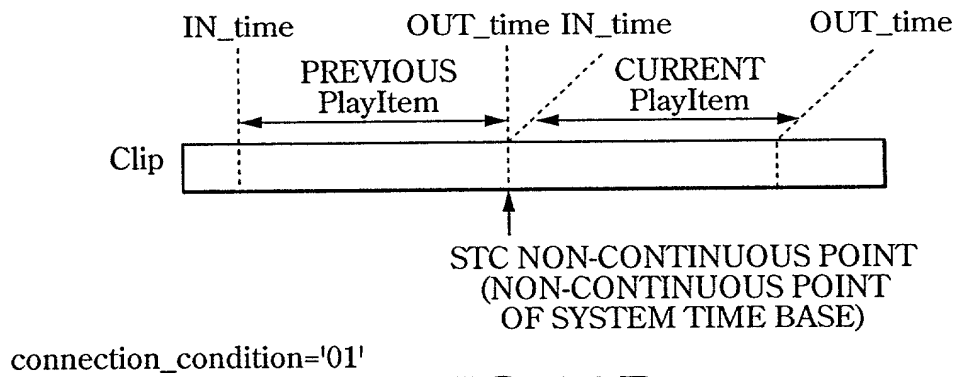
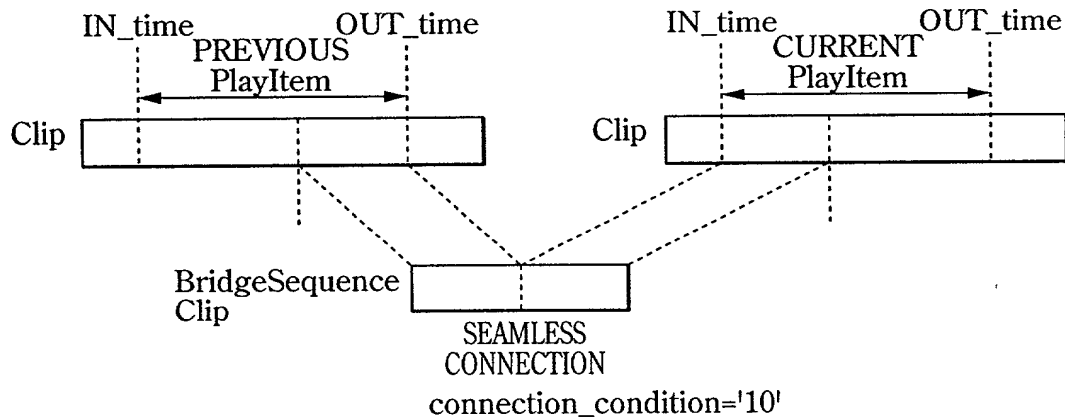
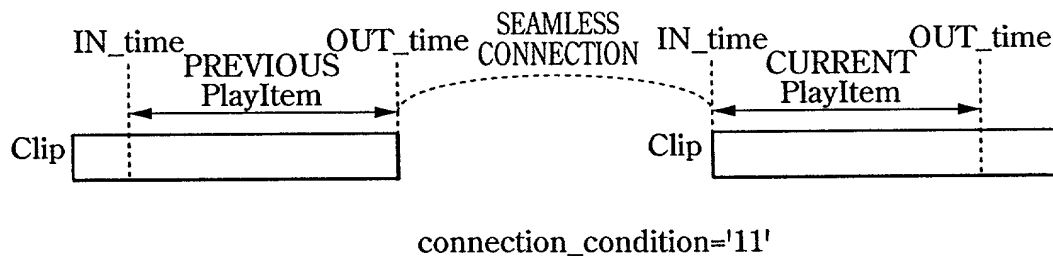


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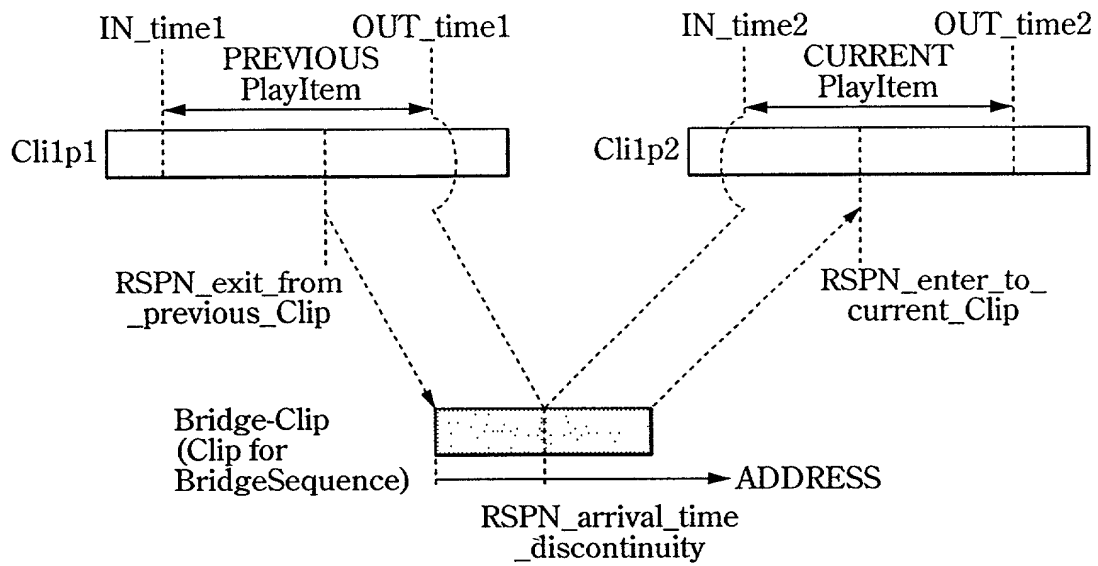
| connection<br>_condition | MEANING  |
|--------------------------|--|
| 00                       | <ul style="list-style-type: none"> <li>• CONNECTION OF PREVIOUS PlayItem TO CURRENT PlayItem IS NOT SURE AS TO SEAMLESS REPLAY.</li> <li>• IF CPI_type OF PlayList IS TU_map type, THIS VALUE MUST BE SET IN connection_condition.</li> </ul>  |
| 01                       | <ul style="list-style-type: none"> <li>• THIS STATE IS ALLOWED ONLY WHEN CPI_type OF PlayList IS EP_map type.</li> <li>• PREVIOUS PlayItem AND CURRENT PlayItem INDICATE DIVISION BECAUSE OF NON-CONTINUOUS POINT OF SYSTEM TIMEBASE (STC BASE).</li> </ul>  |
| 10                       | <ul style="list-style-type: none"> <li>• THIS STATE IS ALLOWED ONLY WHEN CPI_type OF PlayList IS EP_map type.</li> <li>• THIS STATE IS ALLOWED ONLY FOR Virtual PlayList.</li> <li>• CONNECTION OF PREVIOUS PlayItem TO CURRENT PlayItem IS SURE AS TO SEAMLESS REPLAY.</li> <li>• PREVIOUS PlayItem IS CONNECTED TO CURRENT PlayItem USING BridgeSequence. DVR MPEG-2 TRANSPORT STREAM MUST OBEY DVR-STD AS LATER DESCRIBED.</li> </ul> |
| 11                       | <ul style="list-style-type: none"> <li>• THIS STATE IS ALLOWED ONLY WHEN CPI_type OF PlayList IS EP_map type.</li> <li>• CONNECTION OF PREVIOUS PlayItem TO CURRENT Play Item IS SURE AS TO SEAMLESS REPLAY.</li> <li>• PREVIOUS PlayItem IS CONNECTED TO CURRENT PlayItem WITHOUT USING BridgeSequence. DVR MPEG-2 TRANSPORT STREAM MUST OBEY DVR-STD AS LATER DESCRIBED.</li> </ul>  |

FIG.35

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**FIG.36A****FIG.36B****FIG.36C****FIG.36D**

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**FIG.37**

202110-24331001

| SYNTAX                            | NUMBER<br>OF BYTES | ABBREVIATION |
|-----------------------------------|--------------------|--------------|
| BridgeSequenceInfo() {            |                    |              |
| Bridge_Clip_information_file_name | 8*10               | bslbf        |
| RSPN_exit_from_previous_Clip      | 32                 | uimsbf       |
| RSPN_enter_to_current_Clip        | 32                 | uimsbf       |
| }                                 |                    |              |

FIG.38

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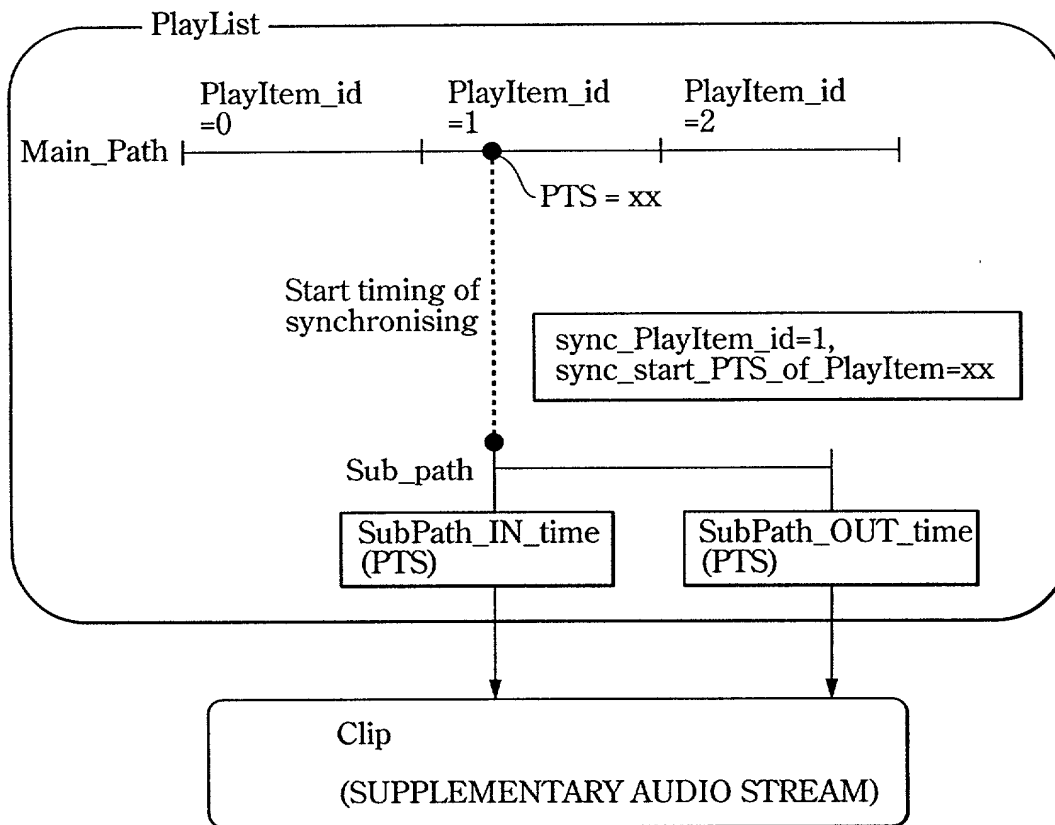


FIG.39

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| SYNTAX                     | NUMBER<br>OF BYTES | ABBREVIATION |
|----------------------------|--------------------|--------------|
| SubPlayItem(){             |                    |              |
| Clip_Information_file_name | 8*10               | bslbf        |
| SubPath_type               | 8                  | bslbf        |
| sync_PlayItem_id           | 8                  | uimsbf       |
| sync_start_PTS_of_PlayItem | 32                 | uimsbf       |
| SubPath_IN_time            | 32                 | uimsbf       |
| SubPath_OUT_time           | 32                 | uimsbf       |
| }                          |                    |              |

FIG.40

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| SubPath_type | MEANING                    |
|--------------|----------------------------|
| 0x00         | Auxiliary audio steam path |
| 0x01-0xff    | reserved                   |

**FIG.41**

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| SYNTAX                                    | NUMBER<br>OF BYTES | ABBREVIATION |
|---|--------------------|--------------|
| PlayListMark(){                           |                    |              |
| <b>version_number</b>                     | 8*4                | bslbf        |
| <b>length</b>                             | 32                 | uimsbf       |
| <b>number_of_PlayList_marks</b>           | 16                 | uimsbf       |
| for (i=0;i<number_of_PlayList_marks;i++){ |                    |              |
| reserved                                  | 8                  | bslbf        |
| <b>mark_type</b>                          | 8                  | bslbf        |
| <b>mark_time_stamp</b>                    | 32                 | uimsbf       |
| <b>PlayItem_id</b>                        | 8                  | uimsbf       |
| reserved                                  | 24                 | uimsbf       |
| <b>character_set</b>                      | 8                  | bslbf        |
| <b>name_length</b>                        | 8                  | uimsbf       |
| <b>mark_name</b>                          | 8*256              | bslbf        |
| <b>ref_thumbnail_index</b>                | 16                 | uimsbf       |
| }   |                    |              |
| }   |                    |              |

FIG.42



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| Mark_type | MEANING     | COMMENT   |
|-----------|-------------|---|
| 0x00      | resume-mark | REPLAY RESUME POINT. THE NUMBER OF REPLAY RESURE POINTS DEFINED IN PlayListMark() MUST BE 0 OR 1.   |
| 0x01      | book-mark   | REPLAY ENTRY POINT OF PlayList. THIS MARK CAN BE SET BY USER AND USED AS MARK SPECIFYING START POINT OF FAVORITE SCENE.                               |
| 0x02      | skip-mark   | SKIP MARK POINT. PLAYER SKIPS PROGRAM FROM THIS POINT TO THE END OF PROGRAM. THE NUMBER OF SKIP MARK POINTS DEFINED IN PlayListMark() MUST BE 0 RO 1. |
| 0x03-0x8F | reserved    |   |
| 0x90-0xFF | reserved    | Reserved for ClipMark()   |

FIG.43

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|                               |   |
|-------------------------------|---|
| CPI_type<br>in the PlayList() | SEMANTICS OF mark_time_stamp  |
| EP_map type                   | mark_time_stamp MUST INDICATE UPPER 32 BITS OF 33 BIT LENGTH PTS CORRESPONDING TO PRESENTATION UNIT REFERENCED BY MARK.   |
| TU_map type                   | mark_time_stamp MUST BE TIME ON TU_map_time_axis AND MUST BE ROUNDED TO time_unit PRECISION.<br>mark_time_stamp IS CALCULATED BY FOLLOWING EQUATION:<br>$\text{mark\_time\_stamp} = \text{TU\_start\_time} \% 2^{32}$ |

FIG.44

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| SYNTAX                                 | NUMBER<br>OF BYTES | ABBREVIATION |
|--|--------------------|--------------|
| <b>zzzzz.clpi {</b>                    |                    |              |
| <b>STC_Info_Start_address</b>          | 32                 | uimsbf       |
| <b>ProgramInfo_Start_address</b>       | 32                 | uimsbf       |
| <b>CPI_Start_address</b>               | 32                 | uimsbf       |
| <b>ClipMark_Start_address</b>          | 32                 | uimsbf       |
| <b>MakersPrivateData_Start_address</b> | 32                 | uimsbf       |
| reserved                               | 96                 | bslbf        |
| <b>ClipInfo()</b>                      |                    |              |
| for (i=0;i<N1;i++){                    |                    |              |
| padding_word                           | 16                 | bslbf        |
| }                                      |                    |              |
| <b>STC_Info()</b>                      |                    |              |
| for (i=0;i<N2;i++){                    |                    |              |
| padding_word                           | 16                 | bslbf        |
| }                                      |                    |              |
| <b>ProgramInfo()</b>                   |                    |              |
| for (i=0;i<N3;i++){                    |                    |              |
| padding_word                           | 16                 | bslbf        |
| }                                      |                    |              |
| <b>CPI()</b>                           |                    |              |
| for (i=0;i<N4;i++){                    |                    |              |
| padding_word                           | 16                 | bslbf        |
| }                                      |                    |              |
| <b>ClipMark()</b>                      |                    |              |
| for (i=0;i<N5;i++){                    |                    |              |
| padding_word                           | 16                 | bslbf        |
| }                                      |                    |              |
| <b>MakersPrivateData()</b>             |                    |              |
| }                                      |                    |              |

FIG.45

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| SYNTAX   | NUMBER<br>OF BYTES | ABBREVIATION |
|--|--------------------|--------------|
| ClipInfo{  |                    |              |
| <b>version_number</b>                                    | 8*4                | bslbf        |
| <b>length</b>  | 32                 | uimsbf       |
| <b>Clip_stream_type</b>                                  | 8                  | bslbf        |
| <b>offset_SPN</b>  | 32                 | uimsbf       |
| <b>TS_recording_rate</b>                                 | 24                 | uimsbf       |
| reserved   | 8                  | bslbf        |
| <b>record_time_and_date</b>                              | 4*14               | bslbf        |
| reserved   | 8                  | bslbf        |
| <b>duration</b>  | 4*6                | bslbf        |
| reserved   | 7                  | bslbf        |
| <b>time_controlled_flag</b>                              | 1                  | bslbf        |
| <b>TS_average_rate</b>                                   | 24                 | uimsbf       |
| <i>if (Clip_stream_type==1) // Bridge-Clip AV stream</i> |                    |              |
| <b>RSPN_arrival_time_discontinuity</b>                   | 32                 | uimsbf       |
| else   |                    |              |
| reserved   | 32                 | bslbf        |
| <b>reserved_for_system_use</b>                           | 144                | bslbf        |
| reserved   | 11                 | bslbf        |
| <b>is_format_identifier_valid</b>                        | 1                  | bslbf        |
| <b>is_original_network_ID_valid</b>                      | 1                  | bslbf        |
| <b>is_transport_stream_ID_valid</b>                      | 1                  | bslbf        |
| <b>is_service_ID_valid</b>                               | 1                  | bslbf        |
| <b>is_country_code_valid</b>                             | 1                  | bslbf        |
| <b>format_identifier</b>                                 | 32                 | bslbf        |
| <b>original_network_ID</b>                               | 16                 | uimsbf       |
| <b>transport_stream_ID</b>                               | 16                 | uimsbf       |
| <b>service_ID</b>  | 16                 | uimsbf       |
| <b>country_code</b>                                      | 24                 | bslbf        |
| <b>stream_format_name</b>                                | 16*8               | bslbf        |
| <b>reserved_for_fortune_use</b>                          | 256                | bslbf        |
| }  |                    |              |

FIG.46

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| Clip_stream_type | MEANING               |
|------------------|-----------------------|
| 0                | Clip AV STREAM        |
| 1                | Bridge-Clip AV STREAM |
| 2-255            | Reserved              |

**FIG.47**

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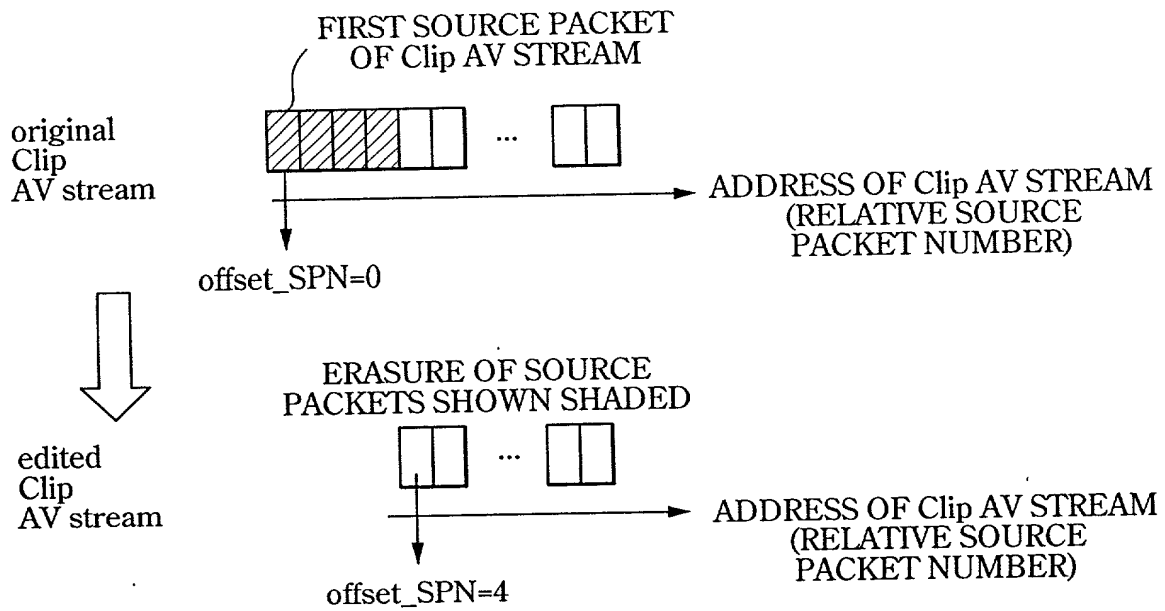


FIG.48

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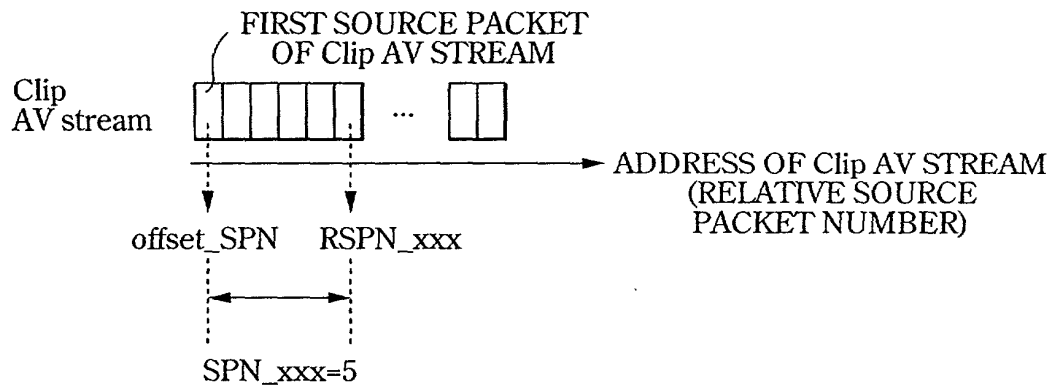


FIG.49

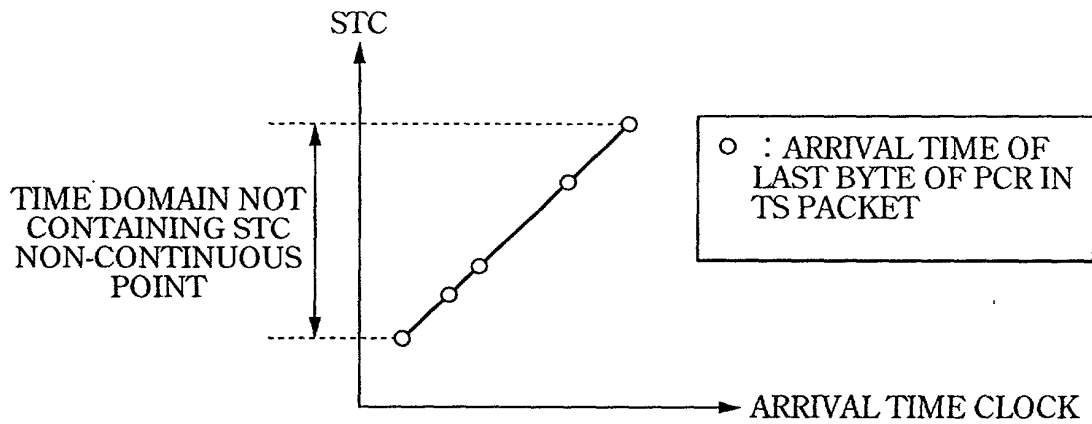


FIG.50A

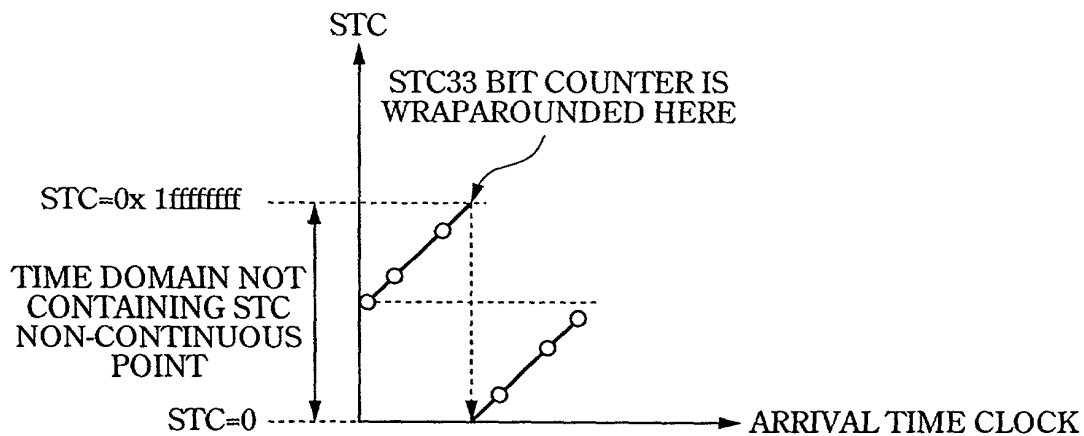


FIG.50B

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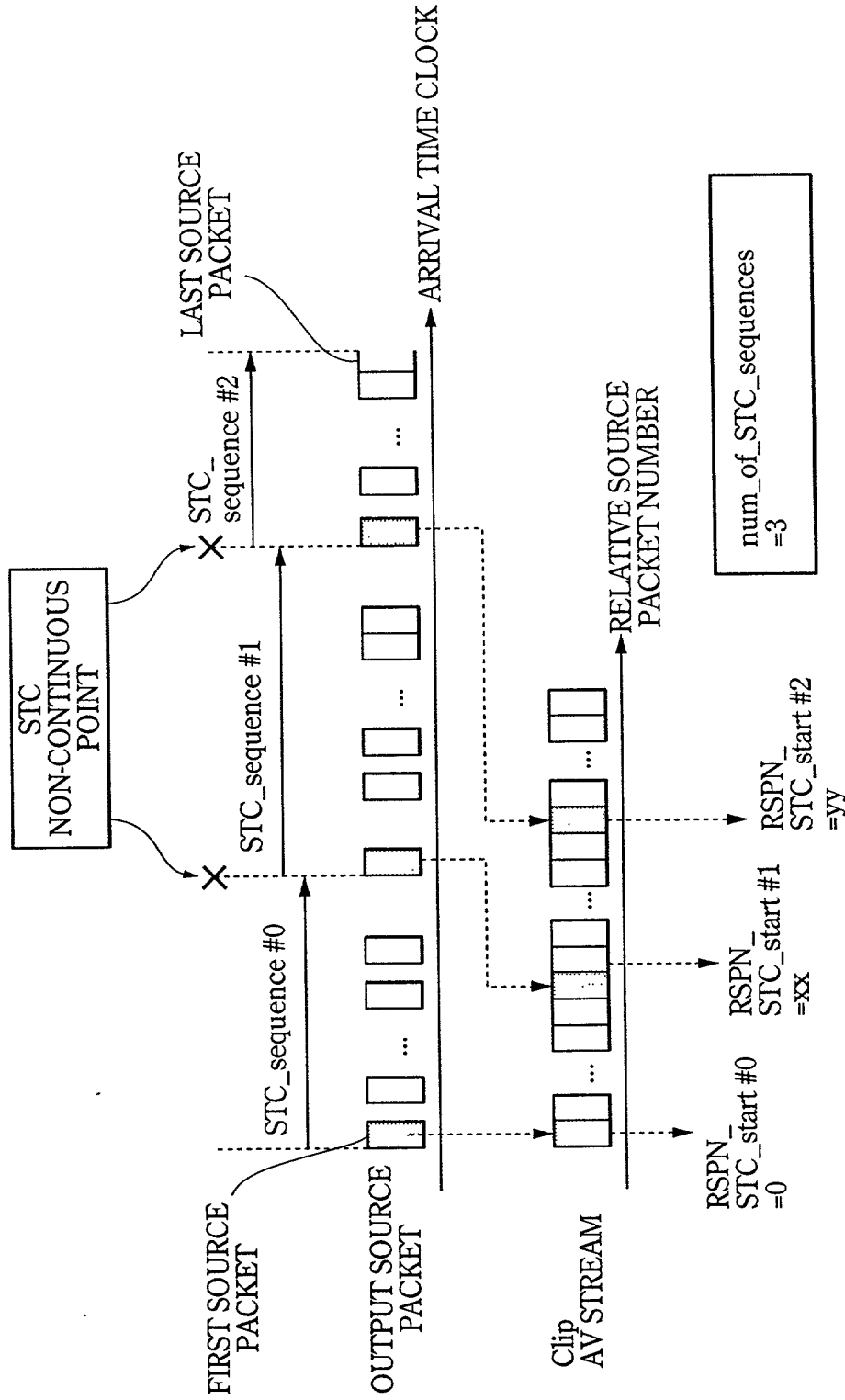


FIG.51



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| SYNTAX  | NUMBER<br>OF BYTES | ABBREVIATION |
|---|--------------------|--------------|
| STC_Info(){   |                    |              |
| <b>version_number</b>   | 8*4                | bslbf        |
| <b>length</b>   | 32                 | uimsbf       |
| if (length !=0){  |                    |              |
| reserved  | 8                  | bslbf        |
| <b>num_of_STC_sequences</b>   | 8                  | uimsbf       |
| for (STC_sequence_id=0;<br>STC_sequence_id<num_of_STC_sequences;<br>STC_sequence_id++){ |                    |              |
| resereved   | 32                 | bslbf        |
| <b>RSPN_STC_start</b>   | 32                 | uimsbf       |
| }   |                    |              |
| }   |                    |              |
| }   |                    |              |

FIG.52

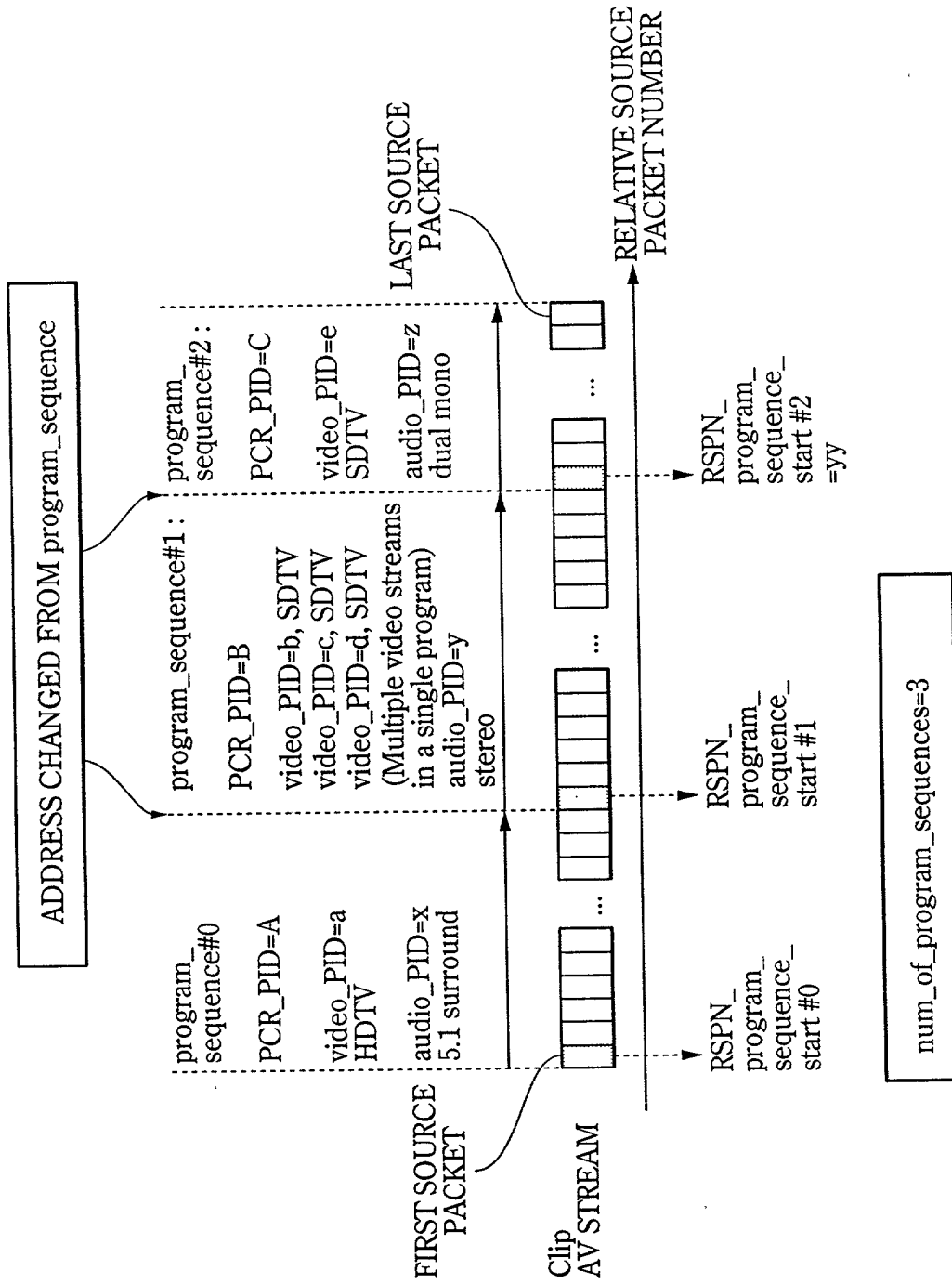


FIG.53

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| SYNTAX  | NUMBER<br>OF BYTES | ABBREVIATION |
|---|--------------------|--------------|
| ProgramInfo() {                                 |                    |              |
| <b>version_number</b>                           | 8*4                | bslbf        |
| <b>length</b>                                   | 32                 | uimsbf       |
| if (length != 0) {                              |                    |              |
| reserved  | 8                  | bslbf        |
| <b>number_of_program_sequences</b>              | 8                  | uimsbf       |
| for (i=0; i<number_of_program_sequences; i++) { |                    |              |
| <b>RSPN_program_sequence_start</b>              | 32                 | uimsbf       |
| reserved  | 48                 | bslbf        |
| <b>PCR_PID</b>                                  | 16                 | bslbf        |
| <b>number_of_videos</b>                         | 8                  | uimsbf       |
| <b>number_of_audios</b>                         | 8                  | uimsbf       |
| for (k=0; k<number_of_videos; k++) {            |                    |              |
| <b>video_stream_PID</b>                         | 16                 | bslbf        |
| <b>VideoCodingInfo()</b>                        |                    |              |
| }   |                    |              |
| for (k=0; k<number_of_audios; k++) {            |                    |              |
| <b>audio_stream_PID</b>                         | 16                 | bslbf        |
| <b>AudioCodingInfo()</b>                        |                    |              |
| }   |                    |              |
| }   |                    |              |
| }   |                    |              |
| }   |                    |              |

FIG.54

2024-04-23 10:00:00

| SYNTAX                      | NUMBER<br>OF BYTES | ABBREVIATION |
|-----------------------------|--------------------|--------------|
| VideoCodingInfo() {         |                    |              |
| <b>video_format</b>         | 8                  | uimsbf       |
| <b>frame_rate</b>           | 8                  | uimsbf       |
| <b>display_aspect_ratio</b> | 8                  | uimsbf       |
| reserved                    | 8                  | bslbf        |
| }                           |                    |              |

FIG.55

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| video_format | MEANING                         |
|--------------|---------------------------------|
| 0            | 480i                            |
| 1            | 576i                            |
| 2            | 480p(including 640×480p format) |
| 3            | 1080i                           |
| 4            | 720p                            |
| 5            | 1080p                           |
| 6-254        | reserved                        |
| 255          | No information                  |

FIG.56

| frame_rate | MEANING                 |
|------------|-------------------------|
| 0          | forbidden               |
| 1          | 24 000/1001 (23.976...) |
| 2          | 24                      |
| 3          | 25                      |
| 4          | 30 000/1001 (29.97..)   |
| 5          | 30                      |
| 6          | 50                      |
| 7          | 60 000/1001 (59.94..)   |
| 8          | 60                      |
| 9-254      | reserved                |
| 255        | No information          |

FIG.57

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| display_aspect_ratio | MEANING                    |
|----------------------|----------------------------|
| 0                    | forbidden                  |
| 1                    | reserved                   |
| 2                    | 4:3 display aspect ratio   |
| 3                    | 16:9 display aspect ration |
| 4-254                | reserved                   |
| 255                  | No information             |

**FIG.58**

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| SYNTAX                      | NUMBER<br>OF BYTES | ABBREVIATION |
|-----------------------------|--------------------|--------------|
| AudioCodingInfo() {         |                    |              |
| <b>audio_format</b>         | 8                  | uimsbf       |
| <b>audio_component_type</b> | 8                  | uimsbf       |
| <b>sampling_frequency</b>   | 8                  | uimsbf       |
| <b>reserved</b>             | 8                  | bslbf        |
| }                           |                    |              |

FIG.59

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| audio_coding | MEANING   |
|--------------|---|
| 0            | MPEG-1 audio layer I or II                                |
| 1            | Dolby AC-3 audio  |
| 2            | MPEG-2 AAC  |
| 3            | MPEG-2 multi-channel audio, backward compatible to MPEG-1 |
| 4            | SESF LPCM audio   |
| 5-254        | reserved  |
| 255          | No information  |

FIG.60



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| audio_component_type | MEANING                                     |
|----------------------|---|
| 0                    | single mono channel                         |
| 1                    | dual mono channel                           |
| 2                    | stereo (2-channel)                          |
| 3                    | multi-lingual, multi-channel                |
| 4                    | surround sound                              |
| 5                    | audio description for the visually impaired |
| 6                    | audio for the hard of hearing               |
| 7-254                | reserved                                    |
| 255                  | No information                              |

**FIG.61**

| sampling_frequency | MEANING        |
|--------------------|----------------|
| 0                  | 48 kHz         |
| 1                  | 44.1 kHz       |
| 2                  | 32 kHz         |
| 3-254              | reserved       |
| 255                | No information |

**FIG.62**

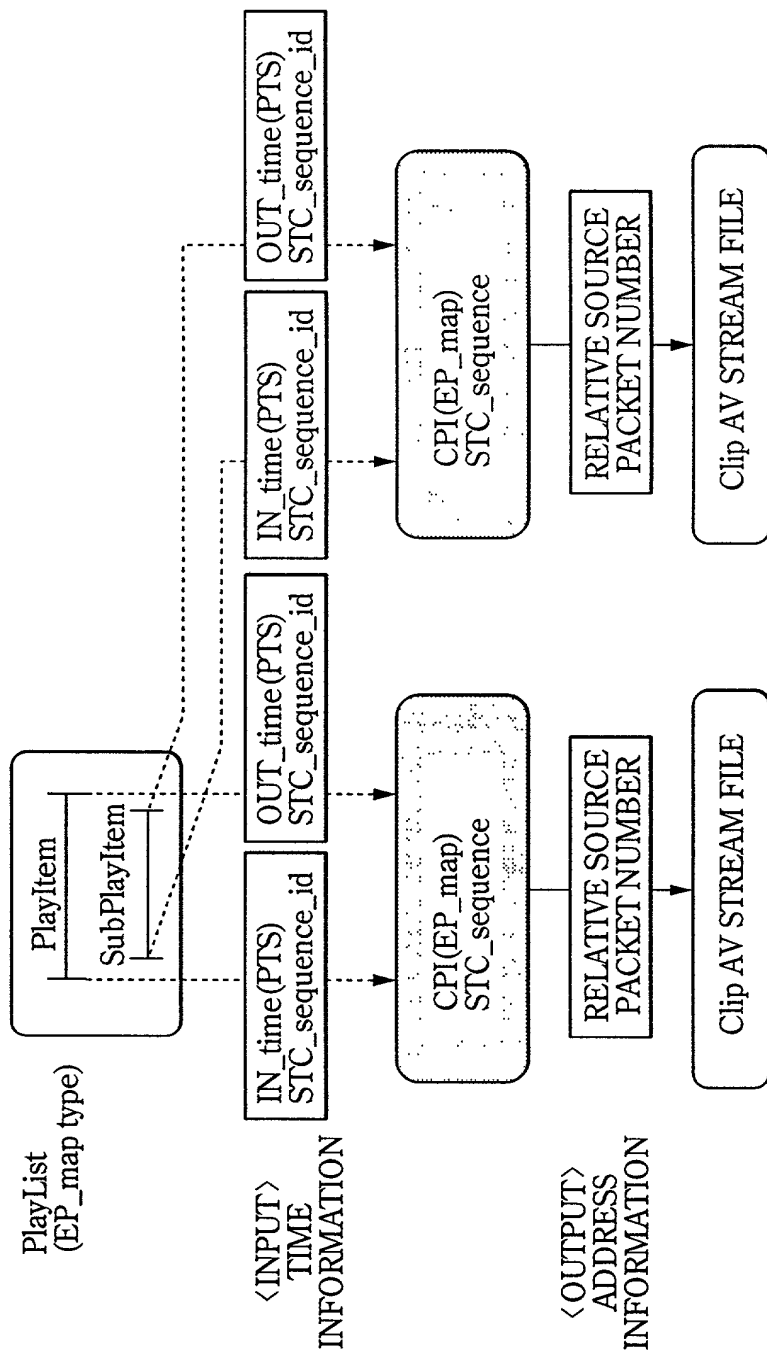


FIG.63

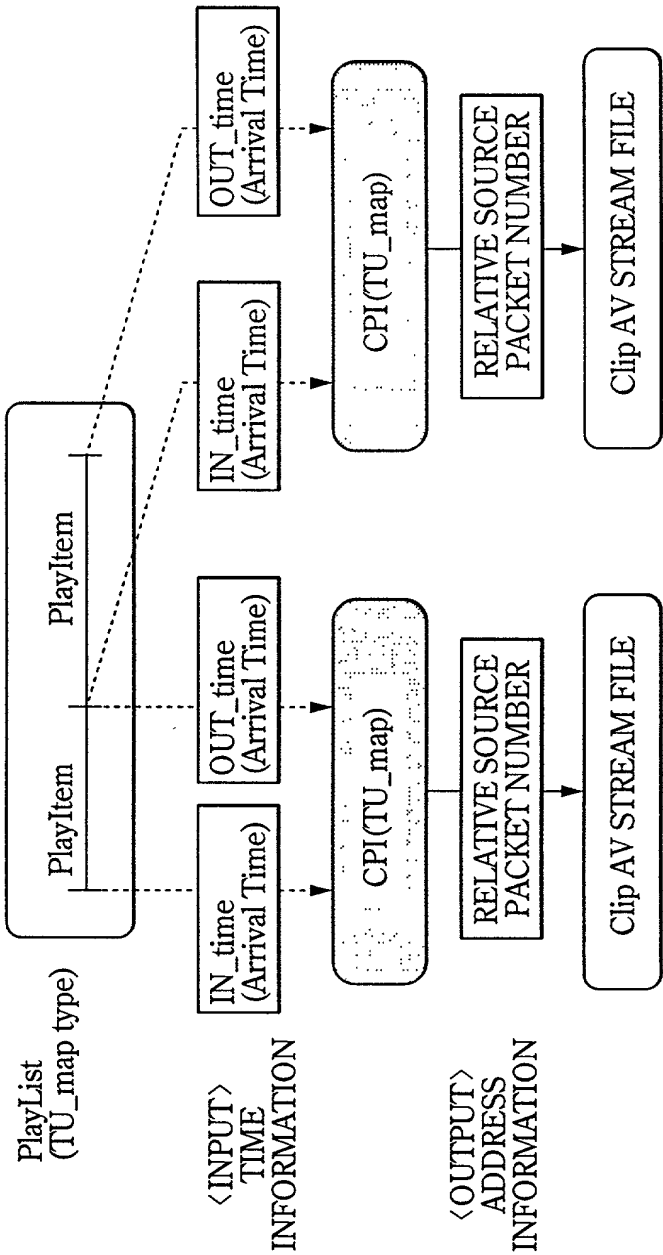


FIG.64

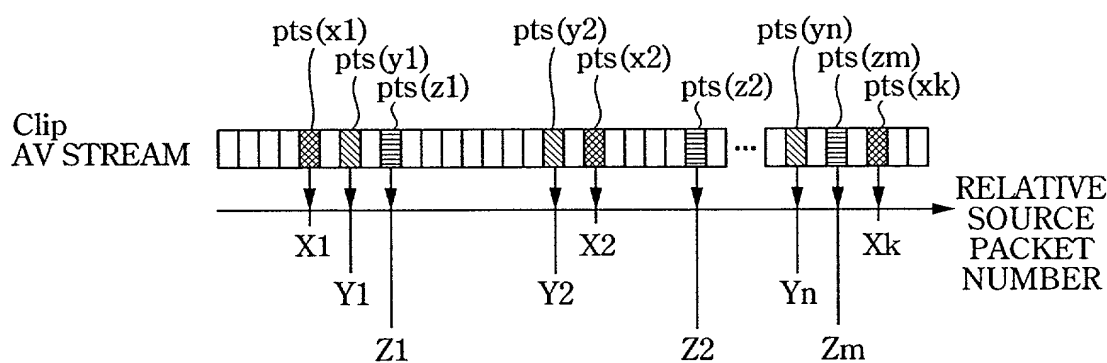
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| SYNTAX                | NUMBER<br>OF BYTES | ABBREVIATION |
|-----------------------|--------------------|--------------|
| CPI0{                 |                    |              |
| <b>version_number</b> | 8*4                | bslbf        |
| <b>length</b>         | 32                 | uimsbf       |
| reserved              | 15                 | bslbf        |
| <b>CPI_type</b>       | 1                  | bslbf        |
| if (CPI_type==0)      |                    |              |
| <b>EP_map()</b>       |                    |              |
| else                  |                    |              |
| <b>TU_map()</b>       |                    |              |
| }                     |                    |              |

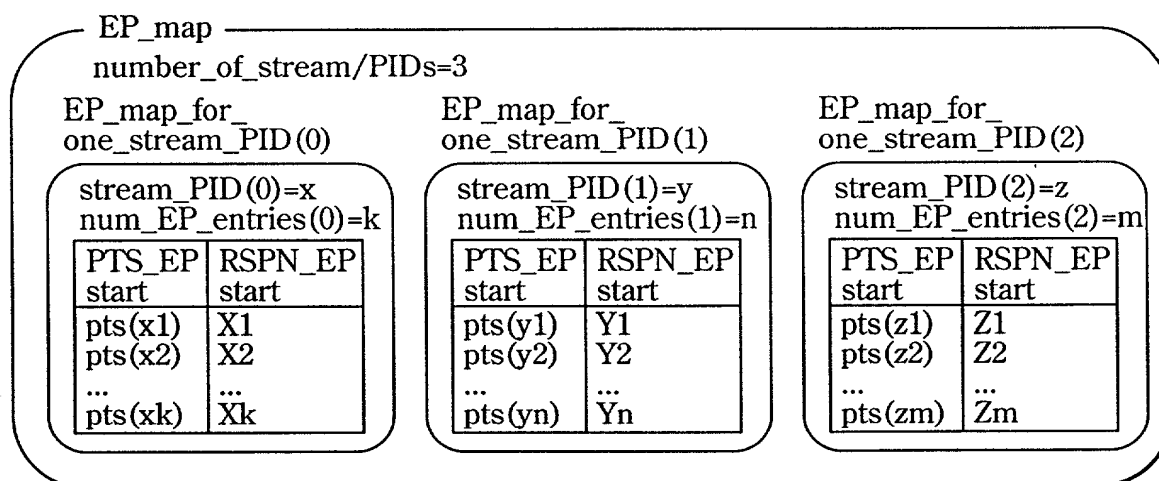
FIG.65

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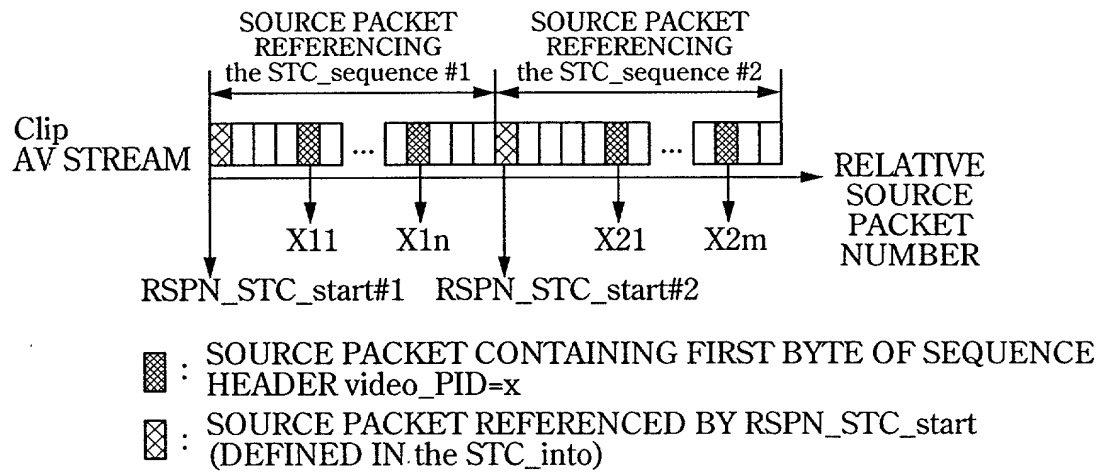
| CPI_type | MEANING     |
|----------|-------------|
| 0        | EP map type |
| 1        | TU map type |

**FIG.66**

- ▨ : SOURCE PACKET CONTAINING FIRST BYTE OF SEQUENCE  
HEADER video\_PID=x
- ▧ : SOURCE PACKET CONTAINING FIRST BYTE OF SEQUENCE  
HEADER video\_PID=y
- ▩ : SOURCE PACKET CONTAINING FIRST BYTE OF SEQUENCE  
HEADER video\_PID=z

**FIG.67**

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EP\_map\_for\_one\_stream\_PID  
video\_PID=x

| PTS_EP start | RSPN_EP start |                                   |
|--------------|---------------|-----------------------------------|
| pts(x11)     | X11           | DATA BELONGING TO STC_sequence #1 |
| ...          | ...           |                                   |
| pts(x1n)     | X1n           |                                   |
|              |               | boundary                          |
| pts(x21)     | X21           | DATA BELONGING TO STC_sequence #2 |
| ...          | ...           |                                   |
| pts(x2m)     | X2m           |                                   |

RSPN\_STC\_start #2 < X21

FIG.68

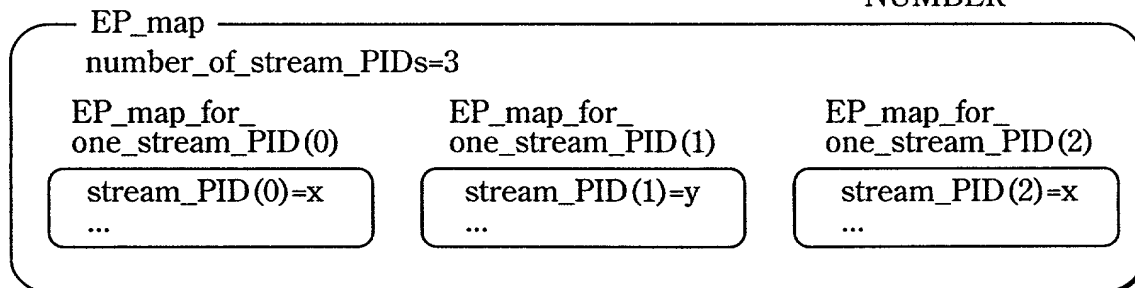
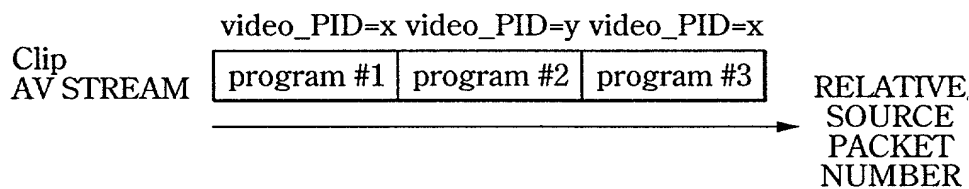


FIG.69

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| SYNTAX  | NUMBER<br>OF BYTES | ABBREVIATION |
|---|--------------------|--------------|
| EP_map(){   |                    |              |
| reserved  | 12                 | bslbf        |
| <b>EP_type</b>                                      | 4                  | uimsbf       |
| <b>number_of_stream_PIDs</b>                        | 16                 | uimsbf       |
| for (k=0;k<number_of_stream_PIDs;k++){              |                    |              |
| <b>stream_PID(k)</b>                                | 16                 | bslbf        |
| <b>num_EP_entries(k)</b>                            | 32                 | uimsbf       |
| <b>EP_map_for_one_stream_PID_Start_address(k)</b>   | 32                 | uimsbf       |
| }   |                    |              |
| for (i=0;i<X;i++){                                  |                    |              |
| <b>padding_word</b>                                 | 16                 | bslbf        |
| }   |                    |              |
| for (k=0;k<number_of_stream_PIDs;k++){              |                    |              |
| <b>EP_map_for_one_stream_PID(num_EP_entries(k))</b> |                    |              |
| for (i=0;i<Y;i++){                                  |                    |              |
| <b>padding_word</b>                                 | 16                 | bslbf        |
| }   |                    |              |
| }   |                    |              |
| }   |                    |              |

FIG.70

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| EP_type | MEANING  |
|---------|----------|
| 0       | video    |
| 1       | audio    |
| 2-15    | reserved |

FIG.71



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| SYNTAX                                  | NUMBER<br>OF BYTES | ABBREVIATION |
|---|--------------------|--------------|
| EP_map_for_one_stream_PID( <i>N</i> ) { |                    |              |
| for (i=0;i< <i>N</i> ;i++){             |                    |              |
| PTS_EP_start                            | 32                 | uimsbf       |
| RSPN_EP_start                           | 32                 | uimsbf       |
| }                                       |                    |              |
| }                                       |                    |              |

FIG.72

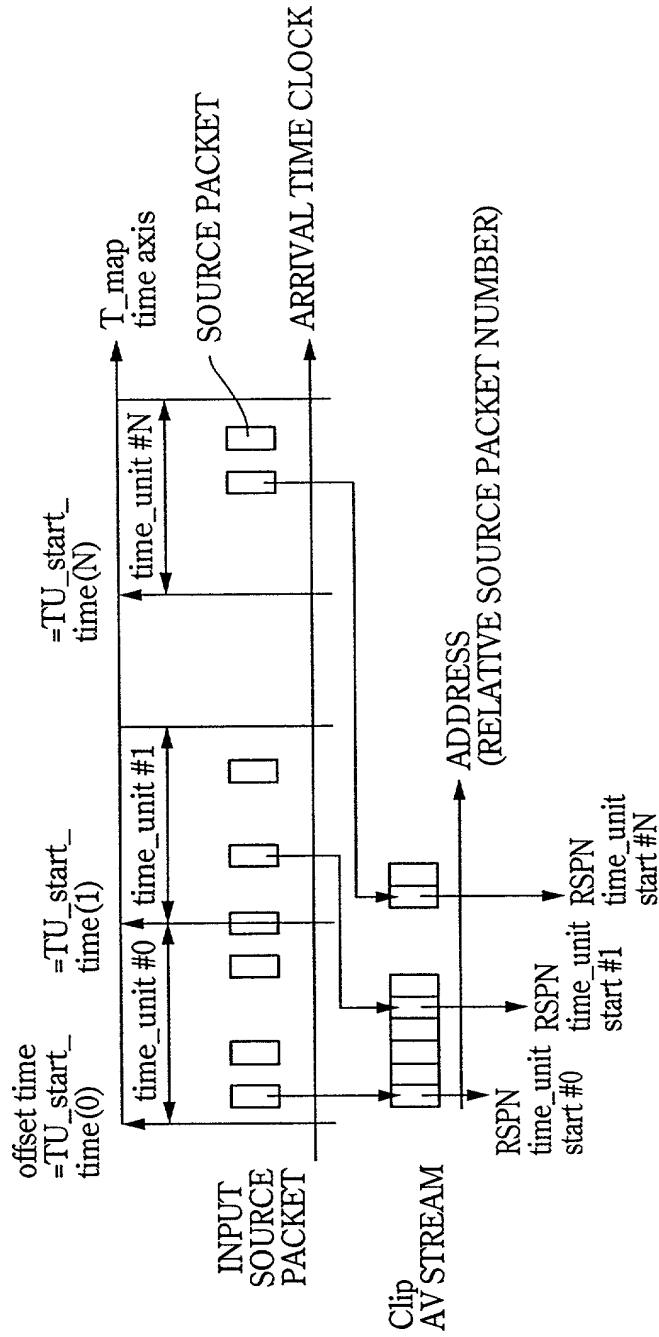


FIG.73

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| SYNTAX                                      | NUMBER<br>OF BYTES | ABBREVIATION |
|---|--------------------|--------------|
| TU_map() {                                  |                    |              |
| offset_time                                 | 32                 | bslbf        |
| time_unit_size                              | 32                 | uimsbf       |
| number_of_time_unit_entries                 | 32                 | uimsbf       |
| for (k=0;k<number_of_time_unit_entries;k++) |                    |              |
| RSPN_time_unit_start                        | 32                 | uimsbf       |
| }   |                    |              |

FIG.74

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| SYNTAX                                  | NUMBER<br>OF BYTES | ABBREVIATION |
|---|--------------------|--------------|
| ClipMark(){                             |                    |              |
| <b>version_number</b>                   | 8*4                | bslbf        |
| <b>length</b>                           | 32                 | uimsbf       |
| <b>number_of_Clip_marks</b>             | 16                 | uimsbf       |
| for (i=0; i<number_of_clip_marks; i++){ |                    |              |
| reserved                                | 8                  | bslbf        |
| <b>mark_type</b>                        | 8                  | bslbf        |
| <b>mark_time_stamp</b>                  | 32                 | uimsbf       |
| <b>STC_sequence_id</b>                  | 8                  | uimsbf       |
| reserved                                | 24                 | bslbf        |
| <b>character_set</b>                    | 8                  | bslbf        |
| <b>name_length</b>                      | 8                  | uimsbf       |
| <b>mark_name</b>                        | 8*256              | bslbf        |
| <b>ref_thumbnail_index</b>              | 16                 | uimsbf       |
| }                                       |                    |              |
| }                                       |                    |              |

FIG.75

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| Mark_type | MEANING                | COMMENT                                      |
|-----------|------------------------|--|
| 0x00-0x8F | reserved               | Reserved for PlayListMark0                   |
| 0x90      | Event-start mark       | MARK POINT INDICATING PROGRAM START POINT    |
| 0x91      | Local event-start mark | MARK POINT INDICATING LOCAL SCENE IN PROGRAM |
| 0x92      | Scene-start mark       | MARK POINT SHOWING SCENE CHANGE POINT        |
| 0x93-0xFF | reserved               |  |

**FIG.76**

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|                               |  |
|-------------------------------|--|
| CPI_type<br>in the PlayList() | SEMANTICS OF mark_time_stamp   |
| EP_map type                   | mark_time_stamp MUST INDICATE UPPER 32 BITS OF 33 BIT LENGTH PTS CORRESPONDING TO PRESENTATION UNIT REFERENCED BY MARK.  |
| TU_map type                   | mark_time_stamp MUST BE TIME ON TU_map_time_axis AND MUST BE ROUNDED TO time_unit PRECISION. mark_time_stamp IS CALCULATED BY FOLLOWING EQUATION:<br><br>$\text{mark\_time\_stamp} = \text{TU\_start\_time} \% 2^{32}$ |

FIG.77

| SYNTAX                | NUMBER<br>OF BYTES | ABBREVIATION |
|-----------------------|--------------------|--------------|
| menu.thmb/mark.thmb { |                    |              |
| reserved              | 256                | bslbf        |
| Thumbnail()           |                    |              |
| for (i=0; i<N1; i++)  |                    |              |
| padding_word          | 16                 | bslbf        |
| }                     |                    |              |

FIG.78

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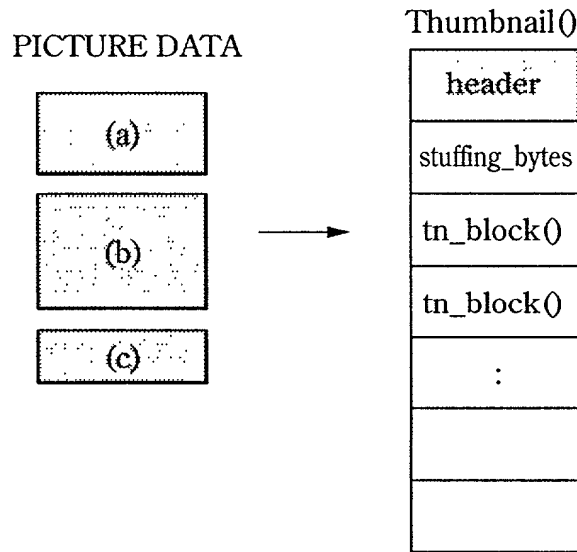
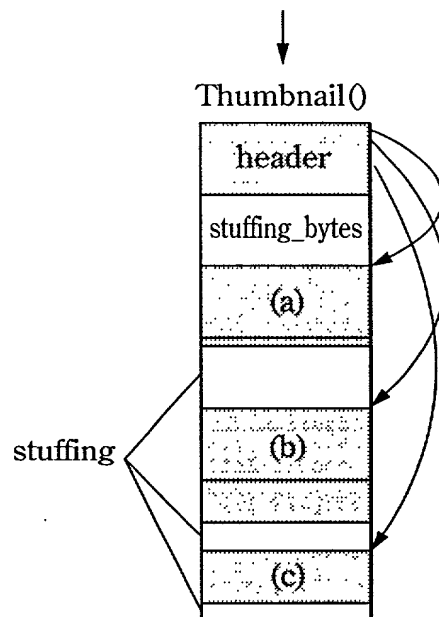
| SYNTAX                                   | NUMBER<br>OF BYTES       | ABBREVIATION |
|--|--------------------------|--------------|
| Thumbnail() {                            |                          |              |
| <b>version_number</b>                    | 8*4                      | char         |
| <b>length</b>                            | 32                       | uimsbf       |
| if (length != 0) {                       |                          |              |
| <b>tn_blocks_start_address</b>           | 32                       | bslbf        |
| <b>number_of_thumbnails</b>              | 16                       | uimsbf       |
| <b>tn_block_size</b>                     | 16                       | uimsbf       |
| <b>number_of_tn_blocks</b>               | 16                       | uimsbf       |
| reserved                                 | 16                       | bslbf        |
| for (i=0; i<number_of_thumbnails; i++) { |                          |              |
| <b>thumbnail_index</b>                   | 16                       | uimsbf       |
| <b>thumbnail_picture_format</b>          | 8                        | bslbf        |
| reserved                                 | 8                        | bslbf        |
| <b>picture_data_size</b>                 | 32                       | uimsbf       |
| <b>start_tn_block_number</b>             | 16                       | uimsbf       |
| <b>x_picture_length</b>                  | 16                       | uimsbf       |
| <b>y_picture_length</b>                  | 16                       | uimsbf       |
| reserved                                 | 16                       | uimsbf       |
| }  |                          |              |
| <b>stuffing_bytes</b>                    | 8*2*L1                   | bslbf        |
| for (k=0; k<number_of_tn_blocks; k++) {  |                          |              |
| <b>tn_block</b>                          | tn_block_<br>size*1024*8 |              |
| }  |                          |              |
| }  |                          |              |
| }  |                          |              |

FIG.79



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| Thumbnail_picture_format | MEANING                |
|--------------------------|------------------------|
| 0x00                     | MPEG-2 Video I-picture |
| 0x01                     | DCF (restricted JPEG)  |
| 0x02                     | PNG                    |
| 0x03-0xff                | reserved               |

**FIG.80****FIG.81A****FIG.81 B**

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DVR MPEG-2 TRANSPORT STREAM

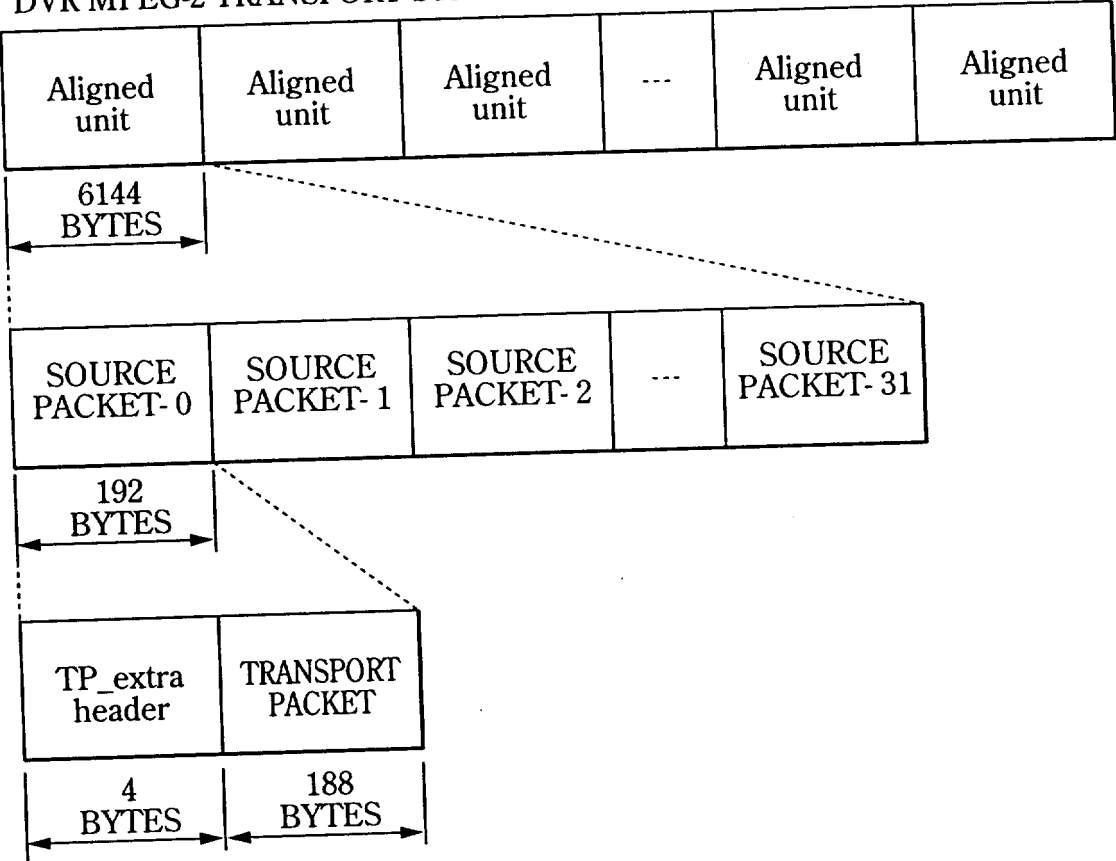


FIG.82

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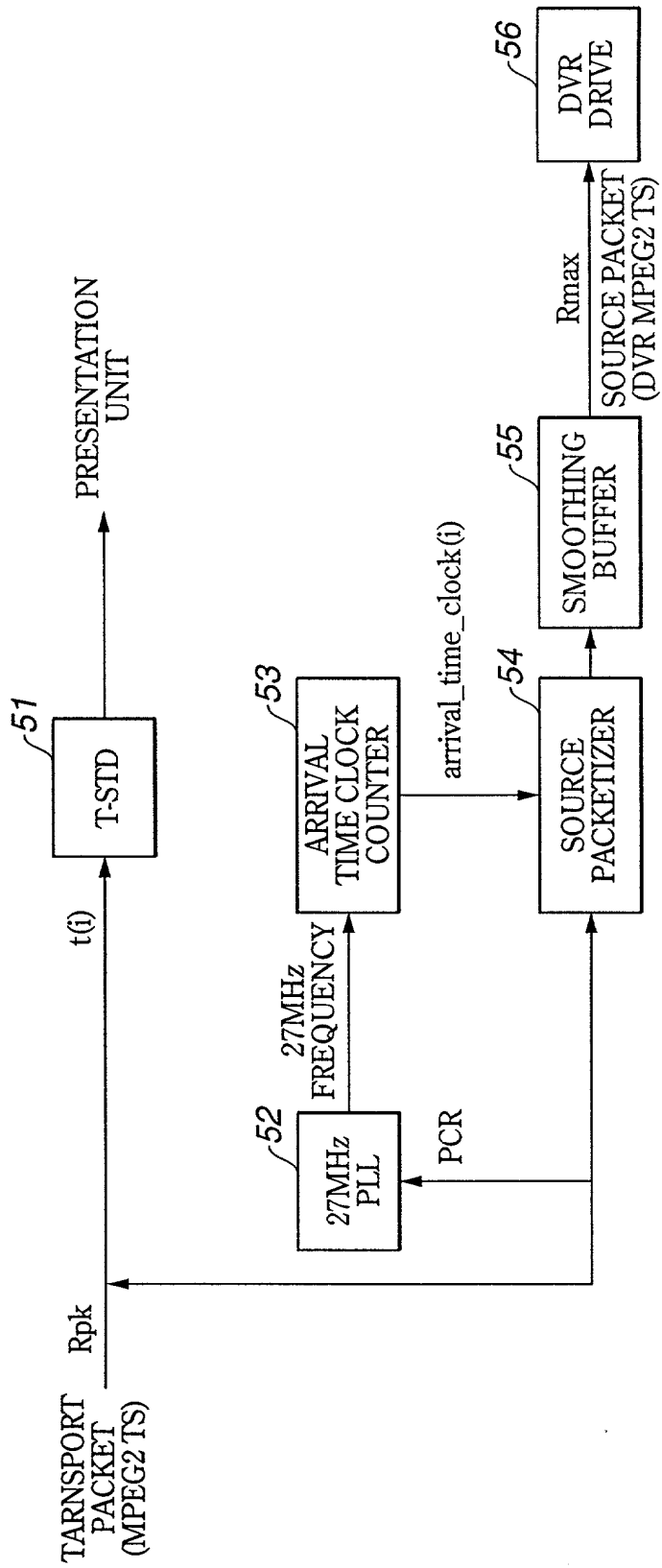


FIG.83

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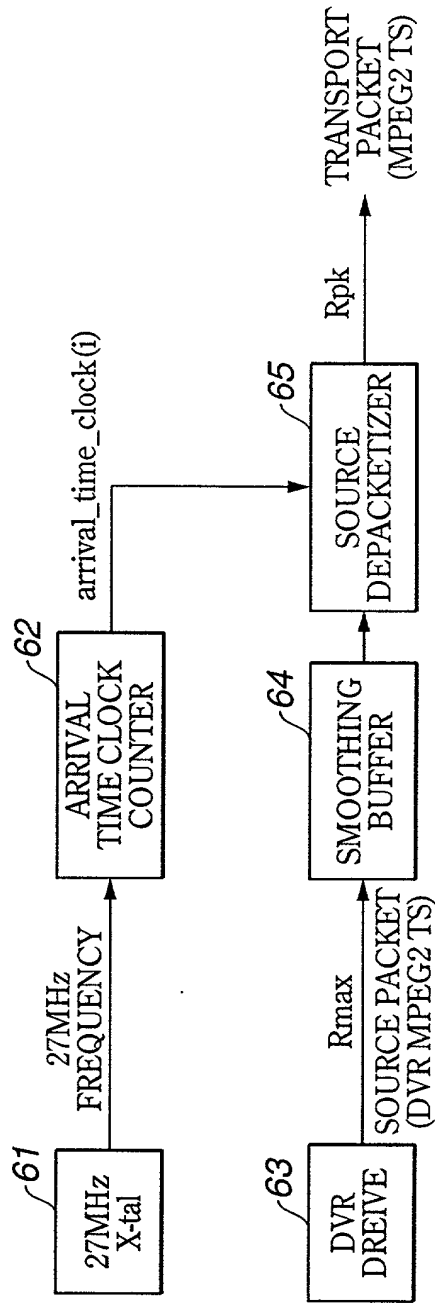


FIG.84

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| SYNTAX             | NUMBER<br>OF BYTES | ABBREVIATION |
|--------------------|--------------------|--------------|
| source_packet() {  |                    |              |
| TP_extra_header()  |                    |              |
| transport_packet() |                    |              |
| }                  |                    |              |

FIG.85

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| SYNTAX                    | NUMBER<br>OF BYTES | ABBREVIATION |
|---------------------------|--------------------|--------------|
| TP_extra_header() {       |                    |              |
| copy_permission_indicator | 2                  | uimsbf       |
| arrival_time_stamp        | 30                 | uimsbf       |
| }                         |                    |              |

FIG.86

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| copy_permission<br>_indicator | MEANING         |
|-------------------------------|-----------------|
| 00                            | copy free       |
| 01                            | no more copy    |
| 10                            | copy once       |
| 11                            | copy prohibited |

**FIG.87**

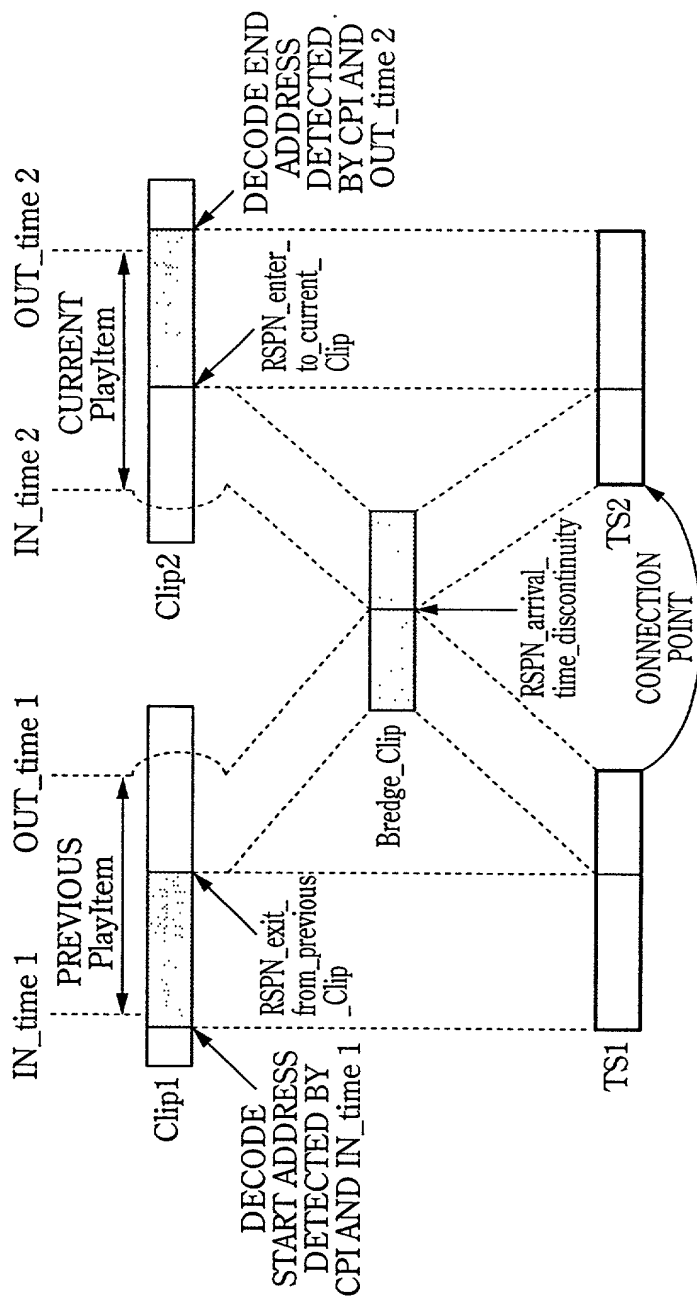


FIG.88



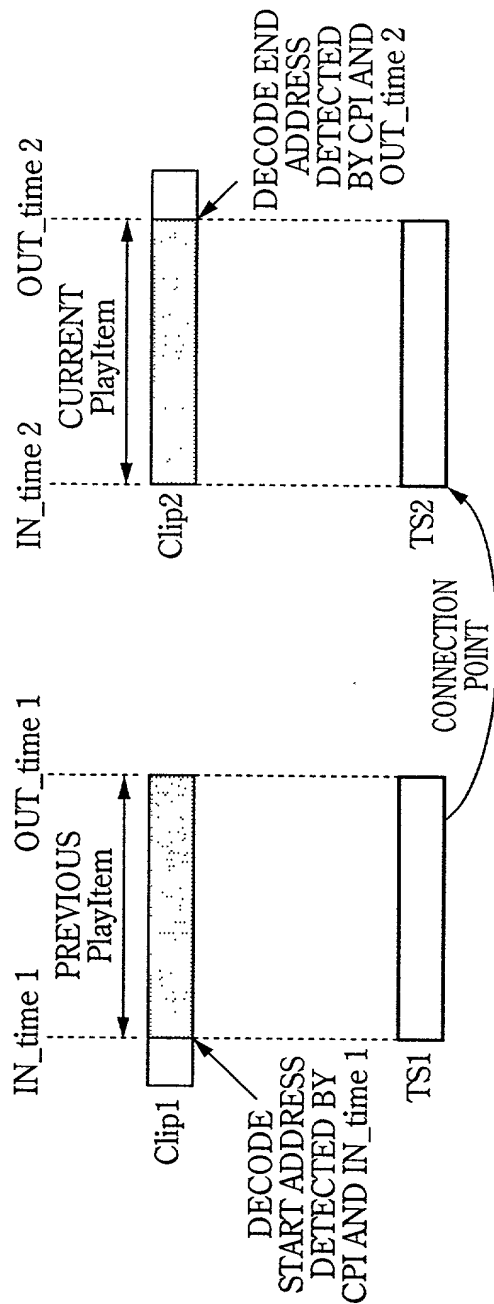


FIG.89

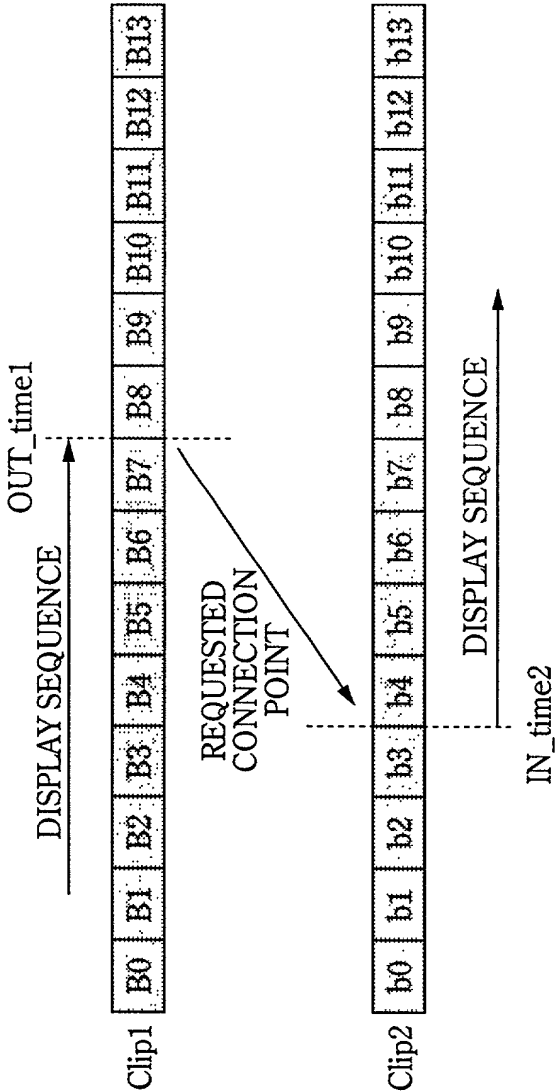


FIG.90

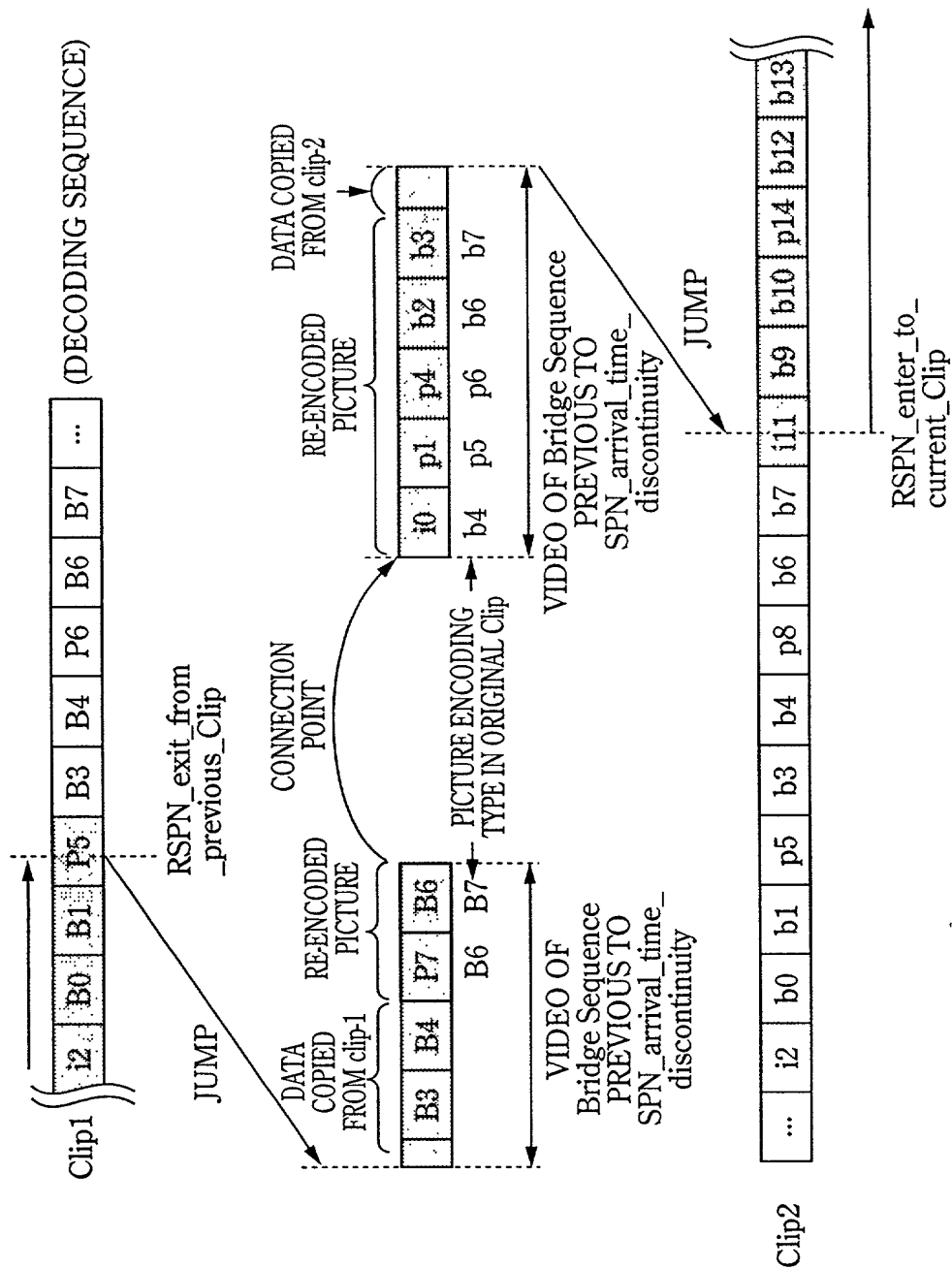


FIG.91

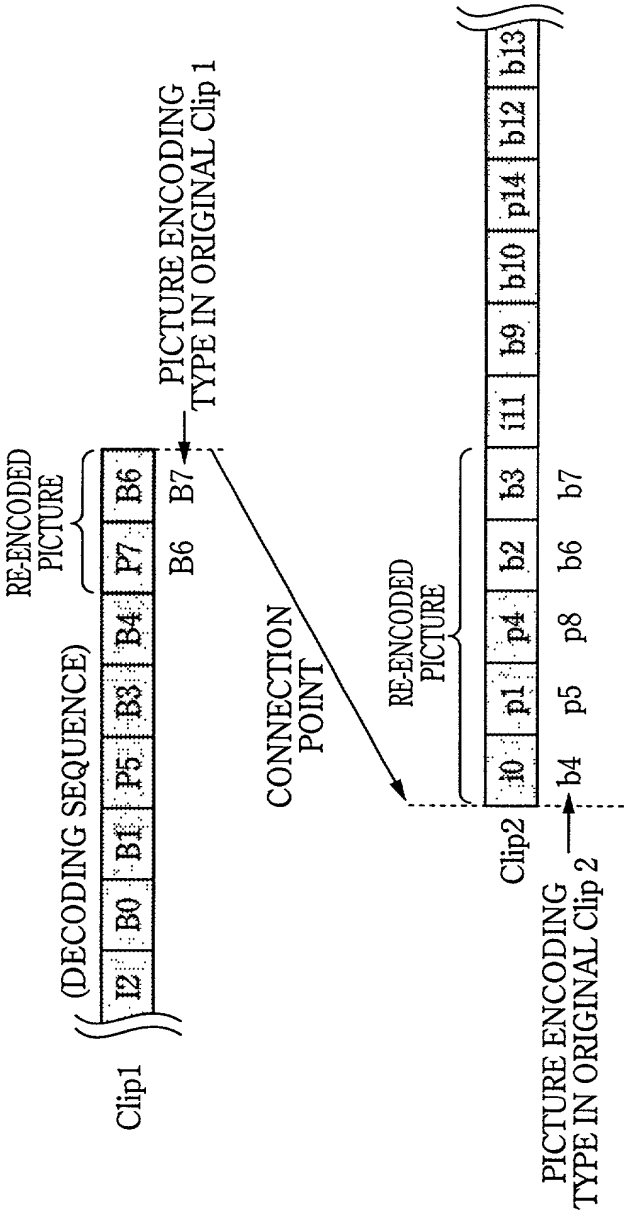


FIG.92

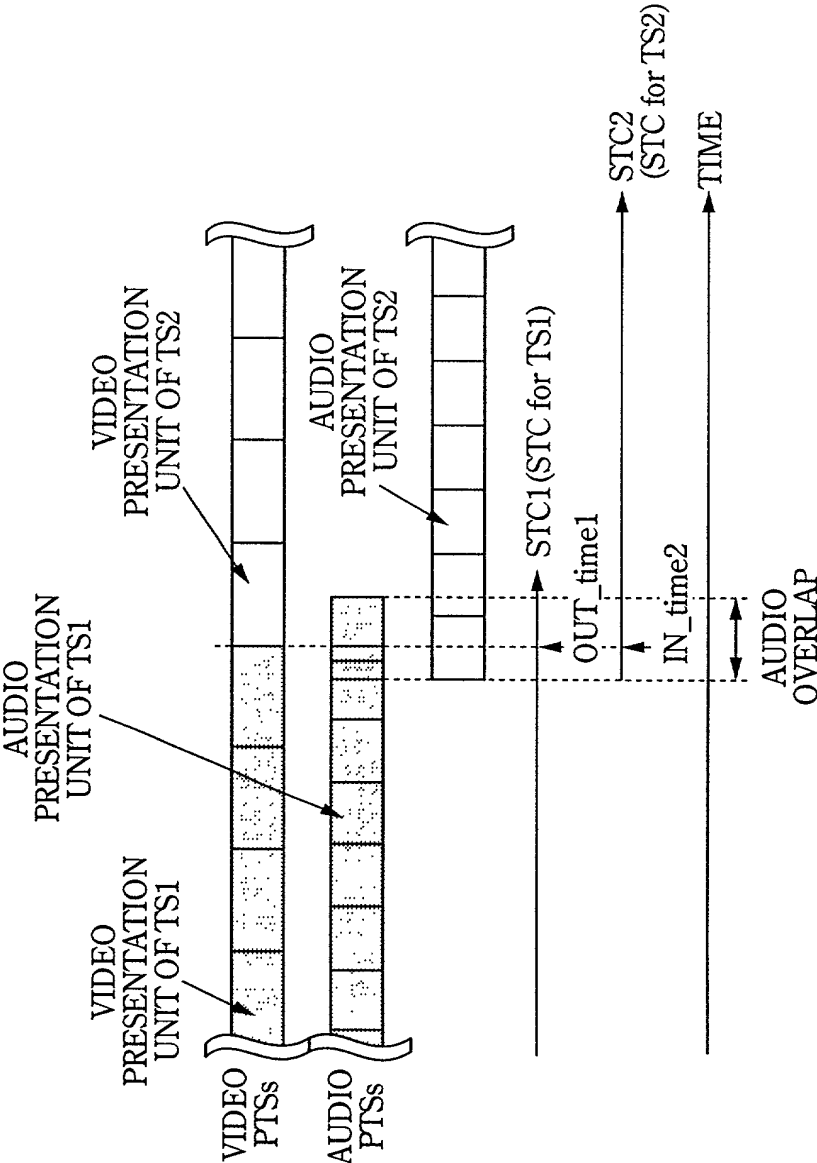


FIG.93

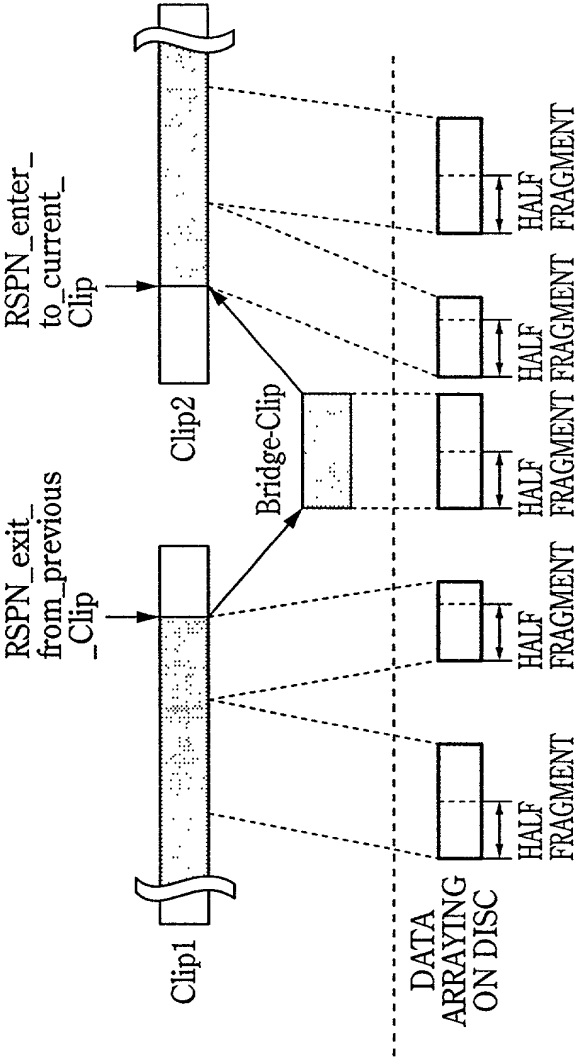


FIG.94

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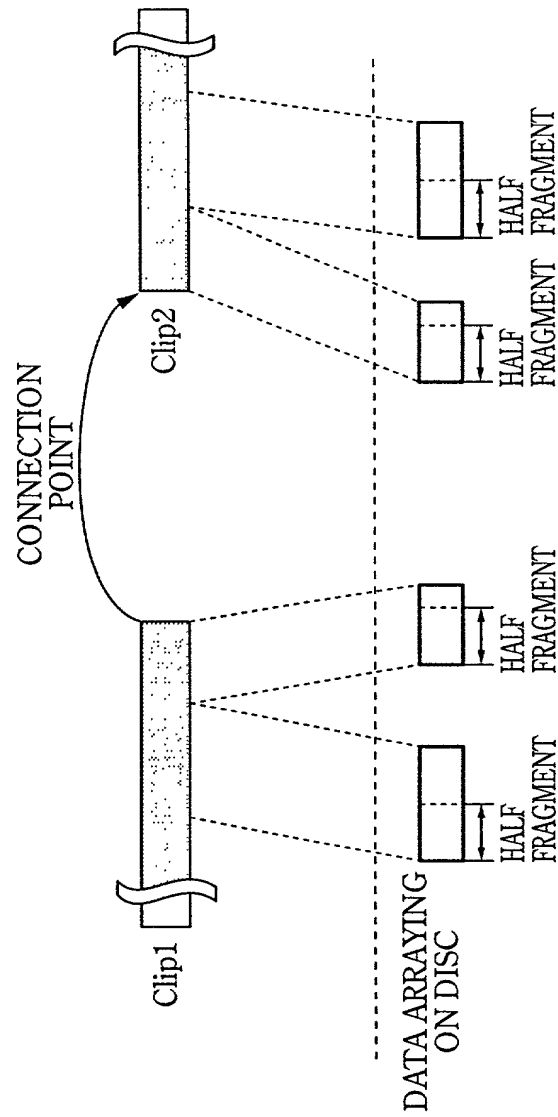


FIG.95

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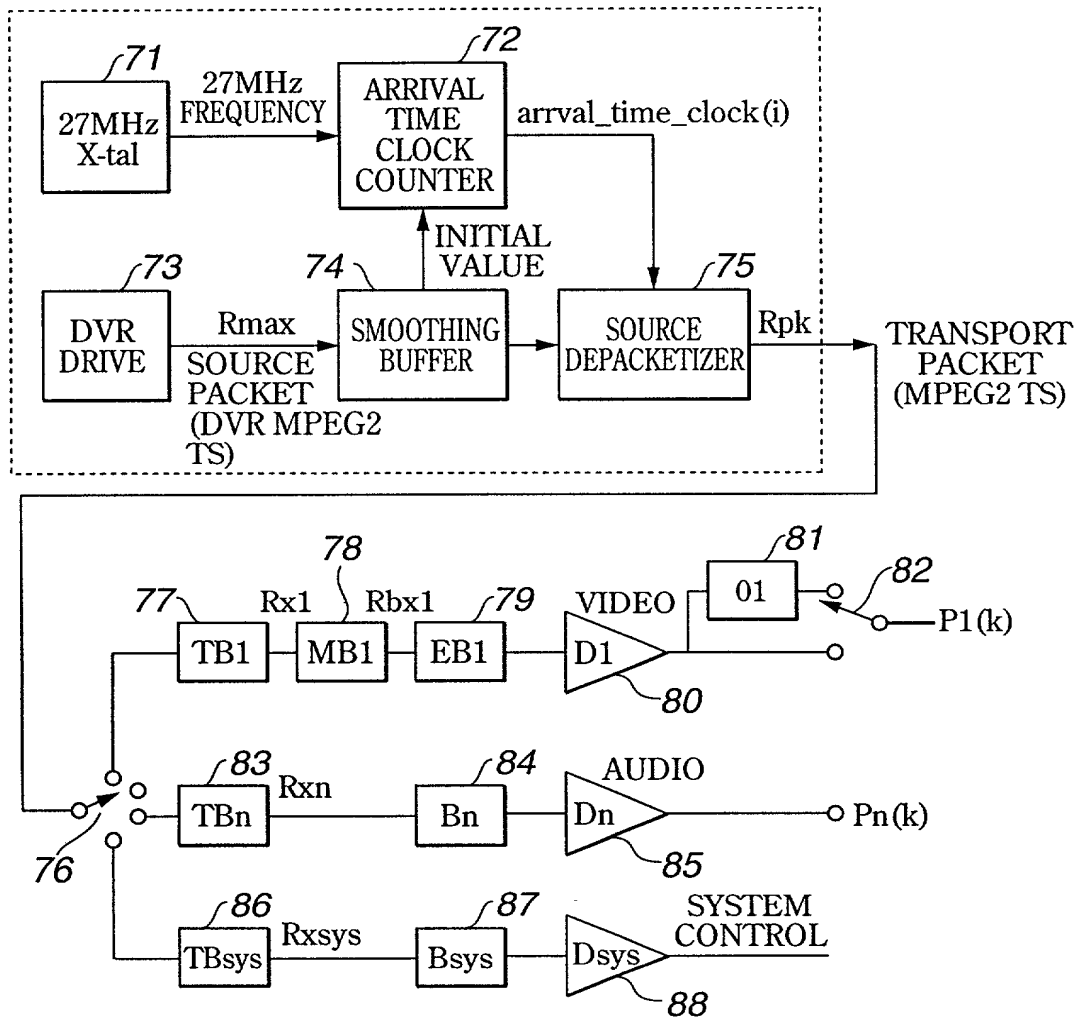


FIG.96



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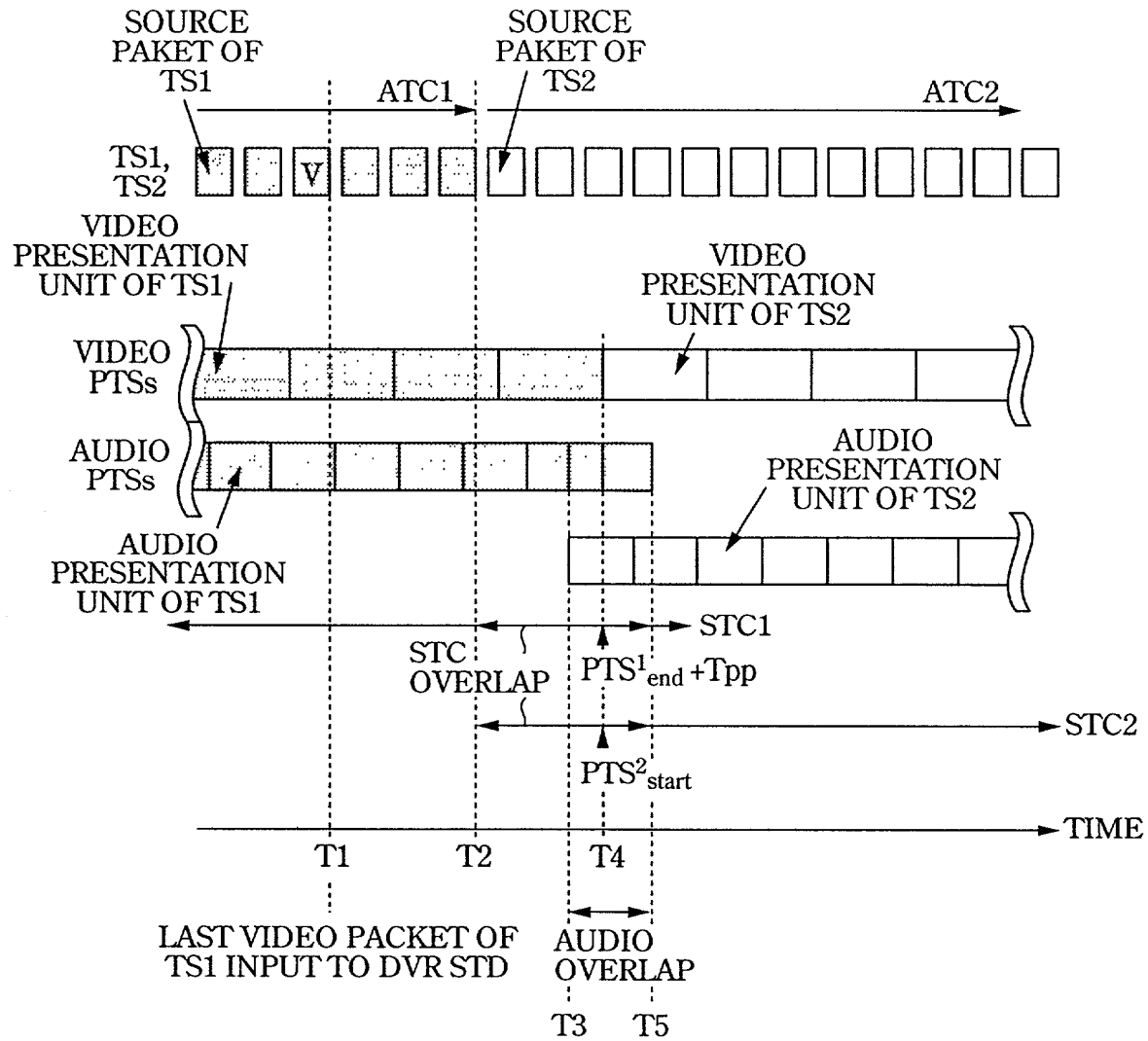


FIG.97

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| SYNTAX                                 | NUMBER<br>OF BYTES | ABBREVIATION |
|--|--------------------|--------------|
| xxxxxx.rpls / yyyyy.vpls {             |                    |              |
| version_number                         | 8*4                | bslbf        |
| <b>PlayList_start_address</b>          | 32                 | uimsbf       |
| <b>PlayListMark_start_address</b>      | 32                 | uimsbf       |
| <b>MakersPrivateData_start_address</b> | 32                 | uimsbf       |
| reserved_for_future_use                | 160                | bslbf        |
| <b>UIAppInfoPlayList()</b>             |                    |              |
| for (i=0;i<N1;i++){                    |                    |              |
| padding_word                           | 16                 | bslbf        |
| }                                      |                    |              |
| <b>PlayList()</b>                      |                    |              |
| for (i=0;i<N2;i++){                    |                    |              |
| padding_word                           | 16                 | bslbf        |
| }                                      |                    |              |
| <b>PlayListMark()</b>                  |                    |              |
| for (i=0;i<N3;i++){                    |                    |              |
| padding_word                           | 16                 | bslbf        |
| }                                      |                    |              |
| <b>MakersPrivateData()</b>             |                    |              |
| for (i=0;i<N4;i++){                    |                    |              |
| padding_word                           | 16                 | bslbf        |
| }                                      |                    |              |
| }                                      |                    |              |

FIG.98

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| SYNTAX                        | NUMBER<br>OF BYTES | ABBREVIATION |
|-------------------------------|--------------------|--------------|
| UIAppInfoPlayList{            |                    |              |
| <b>length</b>                 | 32                 | uimsbf       |
| <b>PlayList_service_type</b>  |                    |              |
| <b>PlayList_character_set</b> | 8                  | uimsbf       |
| reserved_for_word_align       | 3                  | bslbf        |
| <b>playback_control_flag</b>  | 1                  | uimsbf       |
| <b>write_protect_flag</b>     | 1                  | uimsbf       |
| <b>is_played_flag</b>         | 1                  | uimsbf       |
| <b>archive</b>                | 2                  | uimsbf       |
| <b>record_time_and_date</b>   | 4*14               | bslbf        |
| <b>duration</b>               | 4*6                | bslbf        |
| <b>maker_ID</b>               | 16                 | uimsbf       |
| <b>maker_model_code</b>       | 16                 | uimsbf       |
| <b>ref_thumbnail_index</b>    | 16                 | uimsbf       |
| reserved                      | 7                  | bslbf        |
| <b>rp_info_valid_flag</b>     | 1                  | uimsbf       |
| <b>rp_ref_to_PlayItem_id</b>  | 16                 | uimsbf       |
| <b>rp_time_stamp</b>          | 32                 | uimsbf       |
| <b>channel_number</b>         | 16                 | uimsbf       |
| reserved_for_word_align       | 8                  | bslbf        |
| <b>channel_name_length</b>    | 8                  | uimsbf       |
| <b>channel_name</b>           | 8*20               | bslbf        |
| <b>PlayList_name_length</b>   | 8                  | uimsbf       |
| <b>PlayList_name</b>          | 8*255              | bslbf        |
| <b>PlayList_detail_length</b> | 16                 | uimsbf       |
| <b>PlayList_detail</b>        | 8*1200             | bslbf        |
| }                             |                    |              |

FIG.99

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| SYNTAX                                   | NUMBER<br>OF BYTES | ABBREVIATION |
|--|--------------------|--------------|
| PlayList(){                              |                    |              |
| <b>length</b>                            | 32                 | uimsbf       |
| reserved_for_word_align                  | 15                 | bslbf        |
| <b>CPI_type</b>                          | 1                  | bslbf        |
| <b>number_of_PlayItems</b>               | 16                 | uimsbf       |
| if (<Virtual PlayList> && CPI_type==0){  |                    |              |
| <b>number_of_SubPlayItems</b>            | 16                 | uimsbf       |
| }else{                                   |                    |              |
| reserved_for_word_align                  | 16                 | bslbf        |
| }  |                    |              |
| for (PlayItem_id=0;                      |                    |              |
| PlayItem_id<number_of_PlayItems;         |                    |              |
| PlayItem_id++){                          |                    |              |
| <b>PlayItem()</b>                        |                    |              |
| }  |                    |              |
| if (<Virtual PlayList>&& CPI_type==0){   |                    |              |
| for (i=0; i<number_of_SubPlayItems; i++) |                    |              |
| <b>SubPlayItem()</b>                     |                    |              |
| }  |                    |              |
| }  |                    |              |
| }  |                    |              |

FIG.100

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| SYNTAX                     | NUMBER<br>OF BYTES | ABBREVIATION |
|----------------------------|--------------------|--------------|
| SubPlayItem(){             |                    |              |
| length                     | 16                 | uimsbf       |
| Clip_Information_file_name | 8*10               | bslbf        |
| SubPath_type               | 8                  | bslbf        |
| STC_sequence_id            | 8                  | uimsbf       |
| SubPath_IN_time            | 32                 | uimsbf       |
| SubPath_OUT_time           | 32                 | uimsbf       |
| sync_PlayItem_id           | 16                 | uimsbf       |
| sync_start_PTS_of_PlayItem | 32                 | uimsbf       |
| }                          |                    |              |

FIG.101

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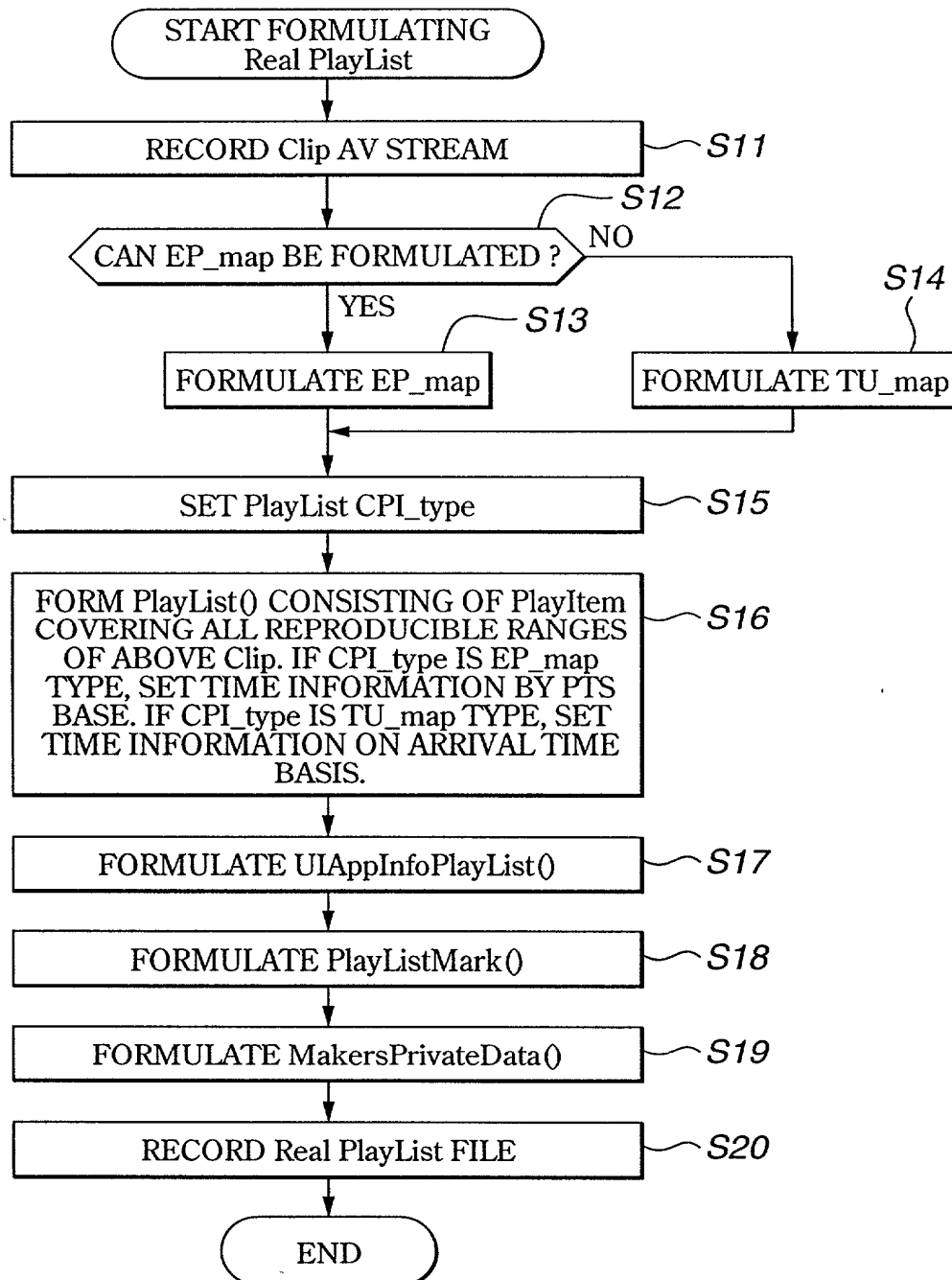


FIG.102

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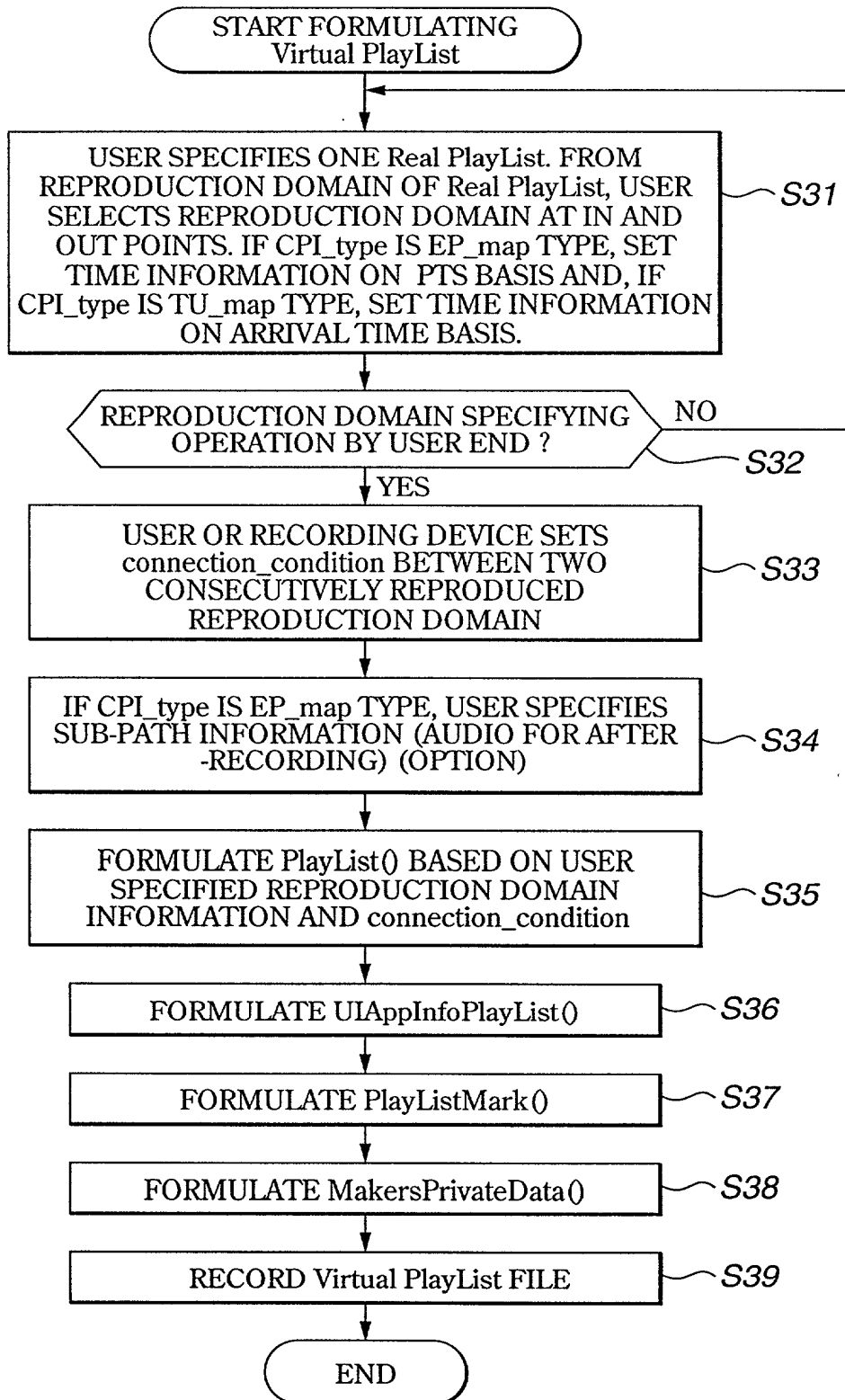


FIG.103

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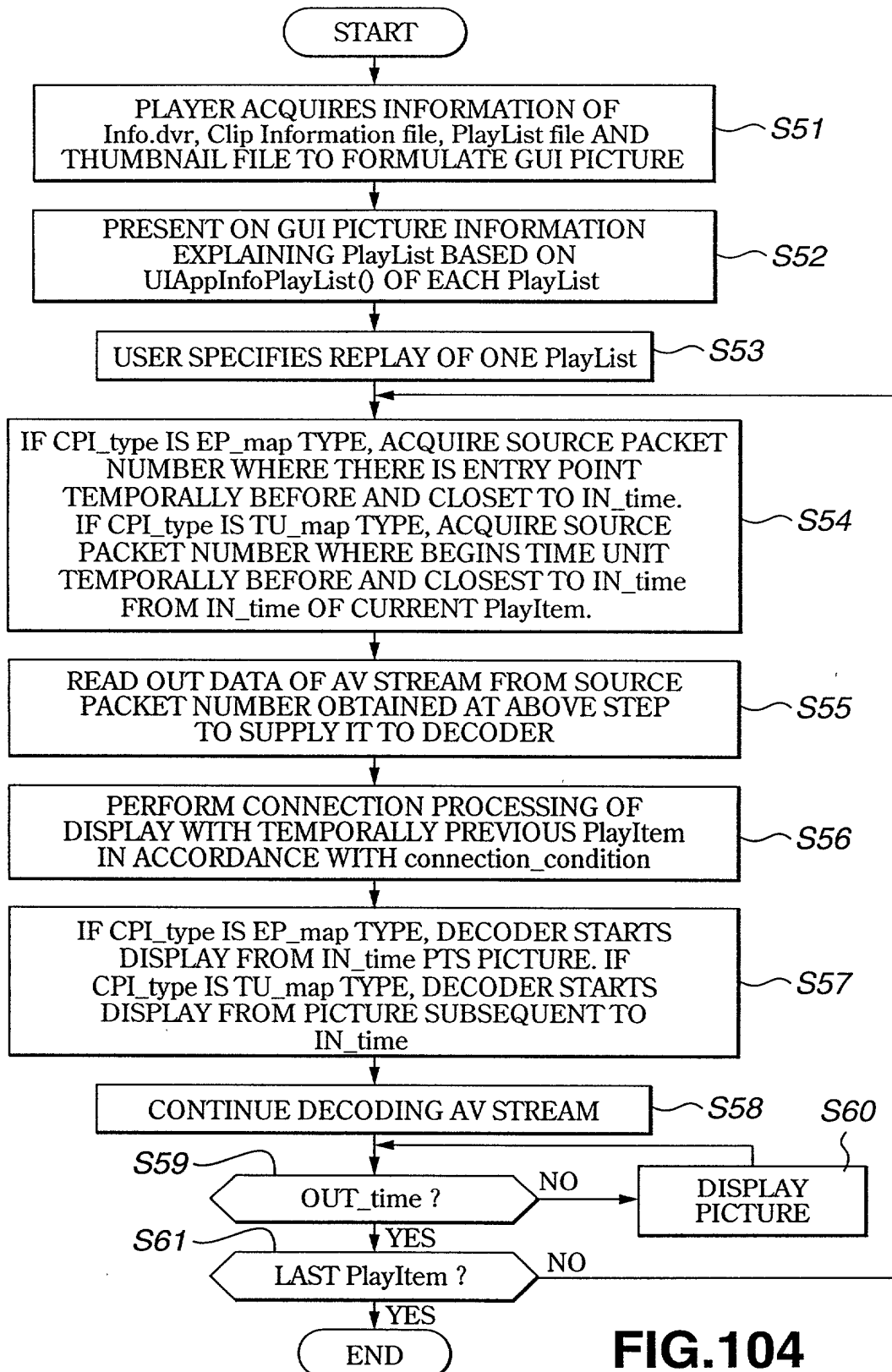


FIG.104



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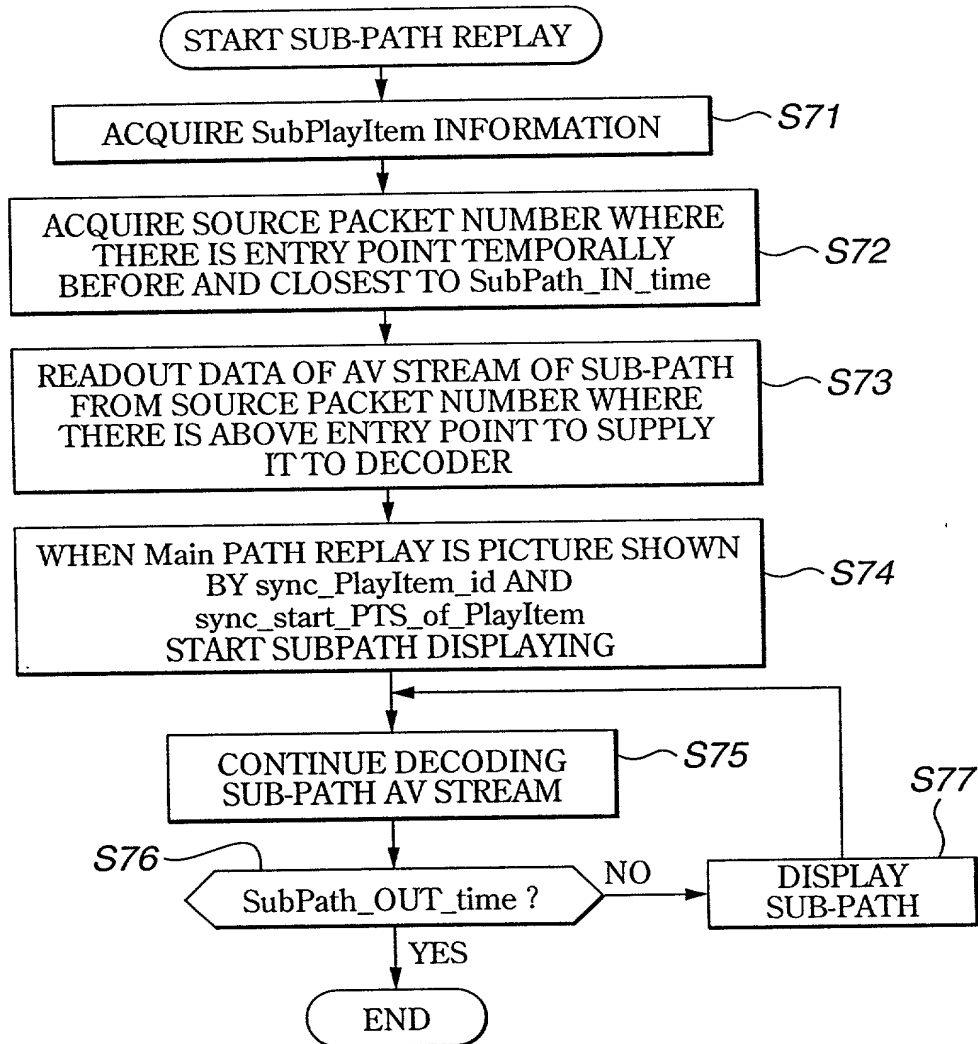


FIG.105

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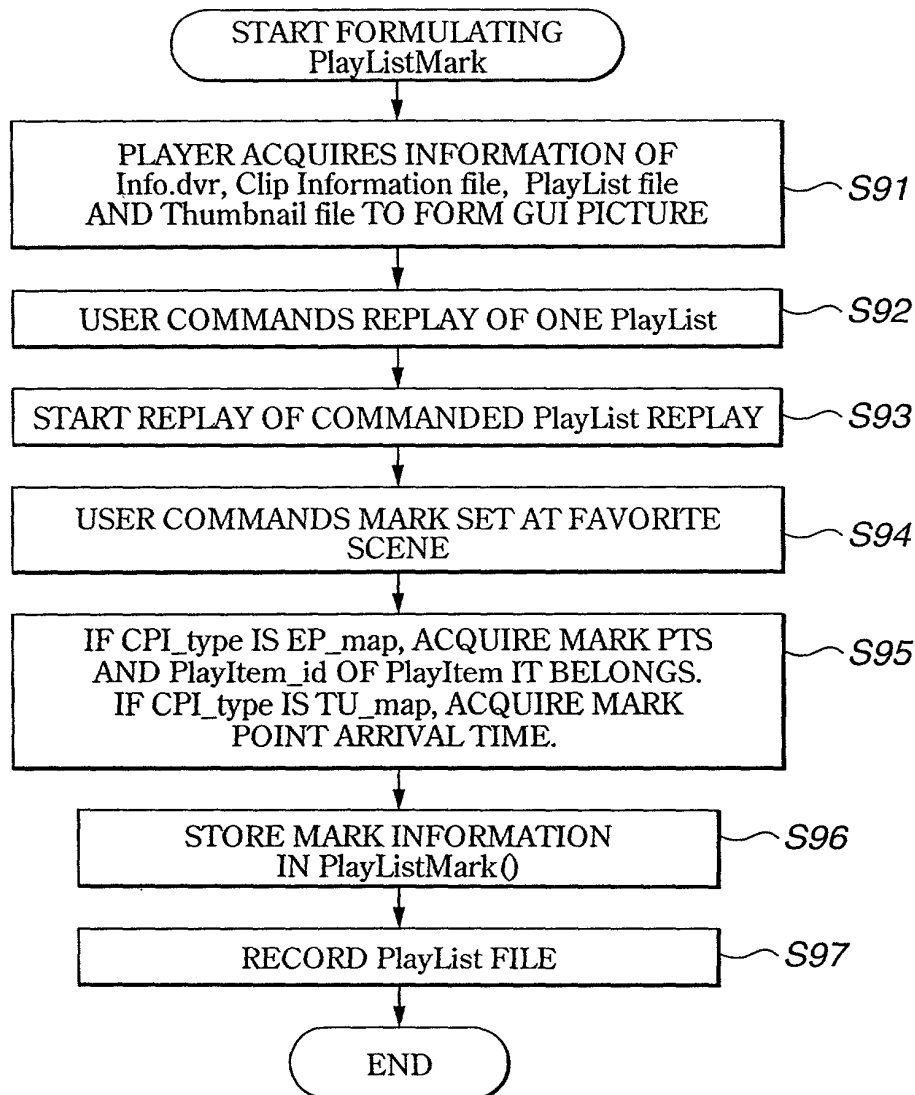


FIG.106

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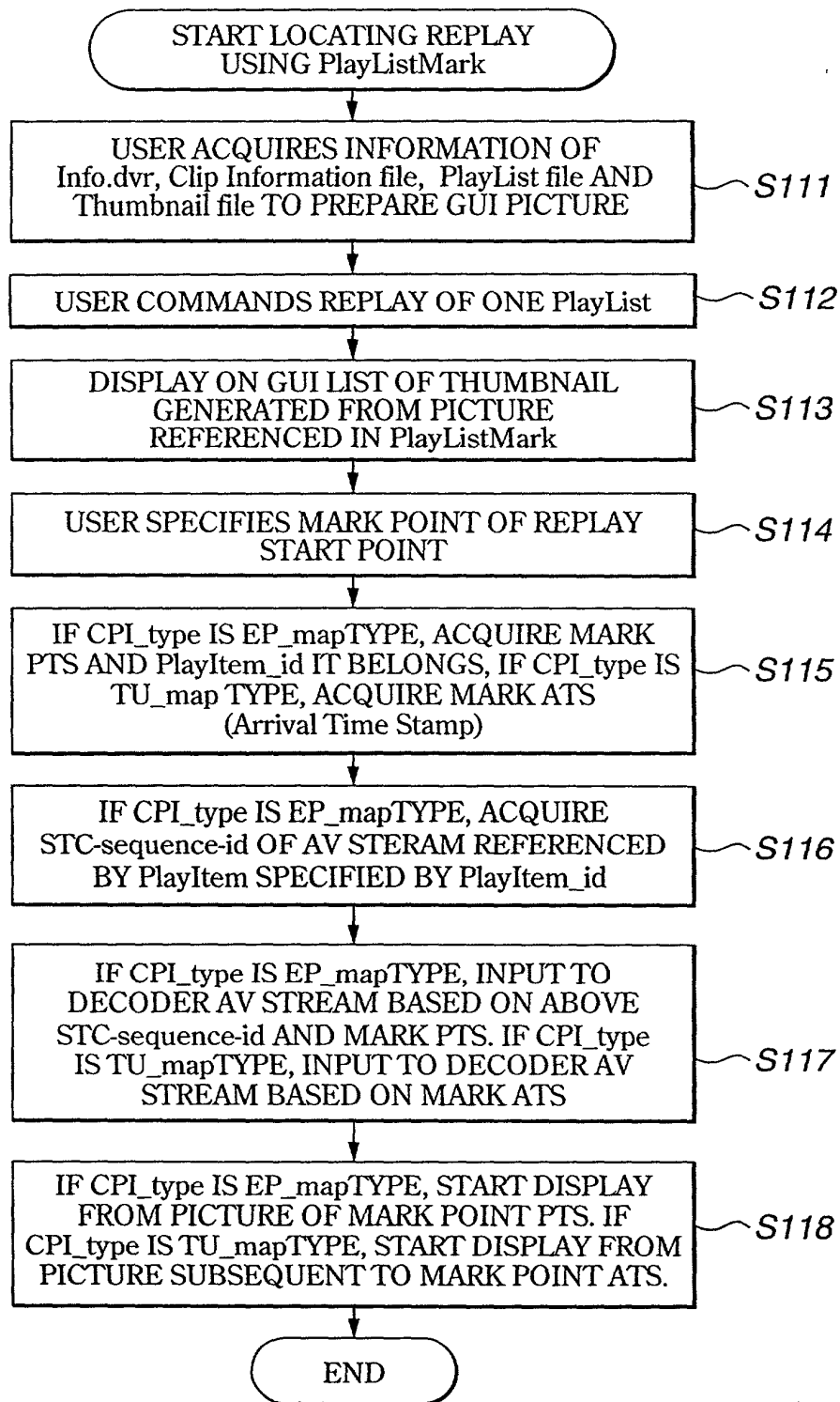


FIG.107

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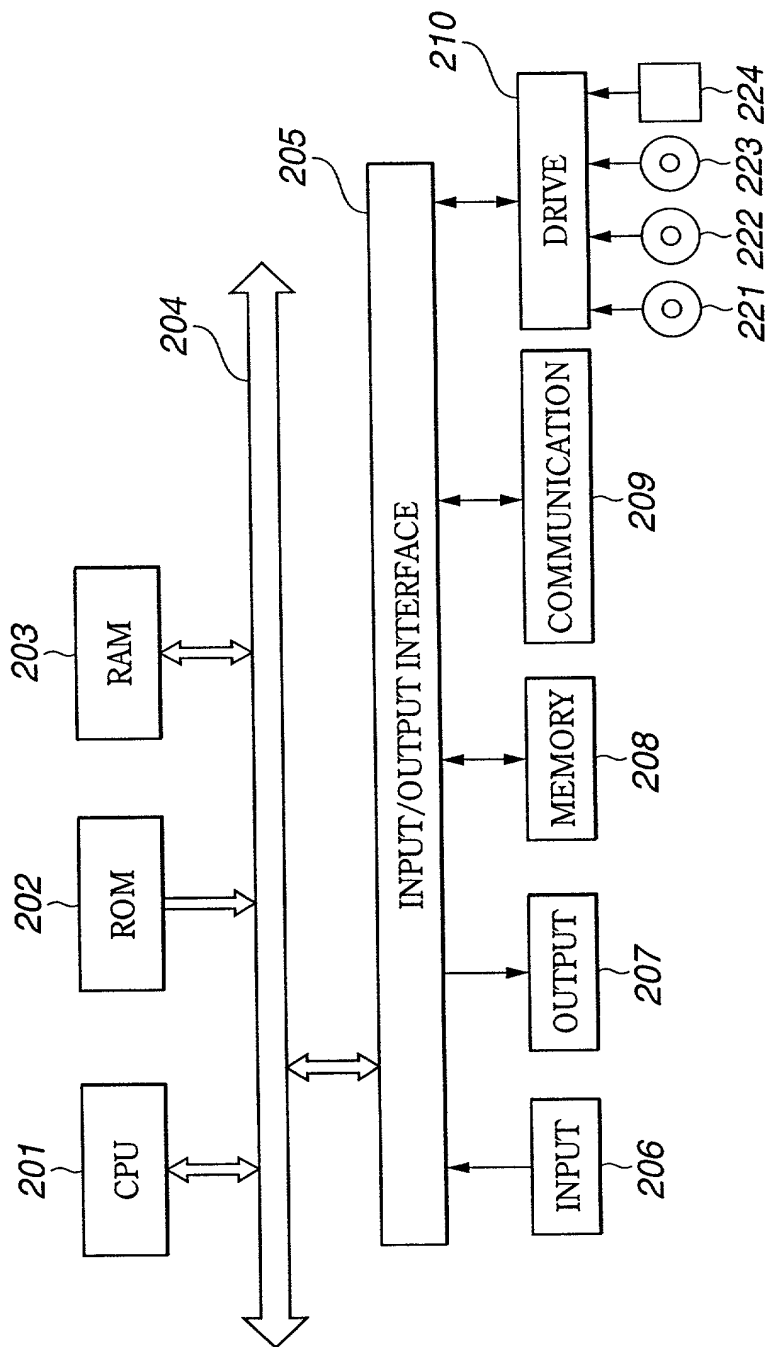


FIG.108